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1997 Alberta Graduate Survey: Labour Market and Educational Experiences of 1994 University Graduates

*Analytic report prepared for
Advanced Education and Career Development*

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Study Highlights in Brief

- 37 percent of 1994 graduates had enrolled in further post-secondary credit programs. Just under one-quarter of 1994 graduates were enrolled at the time of the 1997 AGS. Most were full-time students.
- In 1997, 96 percent of nonstudents (AGS respondents who had left the formal education system) were in the labour force, compared with two-thirds of the AGS respondents who were currently enrolled in some form of post-secondary education.
- Only 3.5 percent of nonstudents in the Class of '94 were unemployed in 1997.
- 89 percent of nonstudents were in full-time jobs in 1997. Over 20 percent of nonstudents were in temporary jobs in 1997, about 15 percent held more than one job, and 11 percent were self-employed.
- After leaving university, most graduates moved into better jobs than those occupied by students. Close to three-quarters of nonstudents worked in professional or managerial jobs in 1997.
- Most (nonstudent) graduates were employed in 1997 in the upper-tier service industries, sectors that generally can be seen as the core of the knowledge economy. Upper-tier services provide good opportunities for professional careers.
- In 1997, employed nonstudents from the Class of '94 reported an average monthly income of \$3,097, before deductions. This works out to an average annual income of \$37,164, a figure well above the Alberta labour force average (estimated at \$30,758).
- Graduates with below-average earnings were more likely to have come from fine arts, humanities, social sciences, physical education/kinesiology, and biological sciences programs.
- Approximately two-thirds of employed nonstudents in 1997 were in jobs that required a university degree. Better-paid occupations were more likely to require a university degree.
- In terms of the overall self-reported fit between graduates' jobs and their university program, close to eight out of ten nonstudents indicated that their job was "somewhat" or "very related" to their program of studies.
- 71 percent of nonstudents were "satisfied" or "very satisfied" with their 1997 job.

Executive Summary

Background

- This report provides a detailed analysis of findings from the *1997 Alberta Graduate Survey* (AGS), a follow-up survey of 1994 graduates from Alberta's four universities completed as part of the provincial government's *Key Performance Indicators* initiative.
- The focus of the report is on employment outcomes and educational status in the two or more years since graduation. Rather than comparing differences across universities, the report uses *field of study* as the central analytic variable, combining graduates from similar fields of study in different universities. Thus, the focus is on the university system, rather than specific institutions within it.
- In 1994, Athabasca University had 196 graduates and the University of Lethbridge had 888, in contrast to the much larger graduating classes from the University of Calgary (4,217 graduates) and the University of Alberta (6,442 graduates). A total of 6,012 telephone interviews were completed in the AGS, representing a response rate of 51% if all the 1994 graduates are used as the base, or 53% if only those with a listed telephone number are included in the calculation.

Profiling the University "Class of 1994"

- 58 percent of the graduates from Alberta universities in 1994 were female, a proportion slightly higher than the national average of 56 percent. A majority of undergraduates receiving degrees in 1994 were in the 20 to 24 years of age category. At the graduate level, the majority of graduates were in their 30s.
- Women continue to be over-represented in the traditionally "female" fields of nursing, social work and education. In contrast engineering, math/physical sciences, M.B.A. and doctoral programs have a higher proportion of male graduates.
- 14 percent of Alberta's 1994 university graduates identified themselves as a member of a visible minority group. Only 1.4 percent were of Aboriginal origins, and 3.1 percent reported a disability that might disadvantage them in employment.

Student Status and Labour Market Experiences

- 91 percent of graduates had been enrolled mainly full-time in their programs. The average completion time was 4.6 years for undergraduate programs and 3.5 years for graduate programs.
- Only 6 percent of 1994 Alberta university graduates had participated in co-op or work experience programs. But six out of ten (58 percent) were employed at some point in the last year of their program, the majority on a part-time basis.

Financing a University Education

- The 57 percent of AGS respondents reporting student loan and other education-related debt graduated with an average debt of \$15,293.
- Student loans comprise the largest share of this debt, averaging \$14,161, while other education-related debt (reported by 18 percent of respondents) averaged \$7,579.

Are 1994 Graduates “Life-long Learners”?

- More than one in three (37 percent) 1994 graduates had enrolled in further post-secondary credit programs. Most of this continuing education was on a full-time basis.
- Just under one-quarter of 1994 graduates were enrolled at the time of the 1997 AGS. Most were full-time students. Full-time enrollment declines sharply among students who are over the age of 25, married, and have dependent children.
- Both in terms of any enrollment since 1994, and current 1997 enrollment, university graduate programs are the most common destination (35 and 40 percent, respectively), followed by university undergraduate programs, then university professional programs.
- 44 percent of respondents intended to enroll in another post-secondary program for credit; 12 percent planned to do so in the coming year; 32 percent were planning further formal education in several years time.

Labour Force Status in 1997

- In 1997, 96 percent of nonstudents (AGS respondents who had left the formal education system) were in the labour force (that is, either employed or out of work but looking for a job), compared with two-thirds of the AGS respondents who were currently enrolled in some form of post-secondary education.
- Very few (only 3.5 percent) of nonstudents in the Class of '94 were unemployed in 1997, compared with an unemployment rate of 11 percent among continuing students.
- Most nonstudents were in full-time jobs in 1997 (89 percent). Their typical work week was 44.7 hours long, compared with 18.4 hours for nonstudents working part-time.
- Over 20 percent of nonstudents were in temporary jobs in 1997, and about 15 percent held more than one job.
- Self-employment among nonstudents, at 11 percent, is less than the provincial average of approximately 20 percent.
- Combining part-time, temporary employment and multiple job holding into a *nonstandard work* category, approximately four in ten nonstudent females and one in four nonstudent males were in nonstandard jobs in 1997.

Occupation and Industry of Employment

- Within the Class of '94, continuing students and nonstudents occupy distinctly different labour market positions; after leaving university, most graduates moved into better jobs than those occupied by students. Close to three-quarters of nonstudents worked in professional or managerial jobs in 1997.
- Female graduates are over-represented in social science, government and education-related professions, a category that includes teaching, social work, law, and other arts-based careers. Higher proportions of females also are in clerical, semiskilled, and paraprofessional occupations. Male graduates are more likely to be employed in natural/applied science professions and in management.
- In terms of industry of employment in 1997, male nonstudents are more likely than are women to be employed in the mining, oil and gas, and business services industries. Women are more concentrated in the public sector, mainly in education and health/social services.
- Most (nonstudent) graduates were employed in 1997 in the upper-tier service industries, sectors that generally can be seen as the core of the “knowledge” economy. Upper-tier services provide good opportunities for professional careers. The goods sector, although providing fewer jobs for graduates overall, offers relatively more management and technical/paraprofessional/skilled opportunities.

- Among nonstudents employed in 1997, nonstandard work was least prevalent in management occupations and in the goods sector. Considering that both areas employ a larger proportion of male graduates, we can see why there are proportionally fewer men in nonstandard jobs. Among female graduates, nonstandard work was as common in professional occupations as in less skilled occupations.

Pay and Benefits

- In 1997, employed nonstudents from the Class of '94 reported an *average* monthly income of \$3,097, before deductions. This works out to an average annual income of \$37,164, a figure well above the Alberta labour force average (estimated at \$30,758).
- Graduates from medicine/dentistry, and all the graduate programs except M.A. programs, reported the highest *median* earnings. Law and engineering graduates also earned well above the median.
- Graduates with below average earnings were more likely to have come from fine arts, humanities, social sciences, physical education/kinesiology, and biological sciences programs.
- Across all fields of study, the female - male earnings ratio (based on median earnings) among full-time nonstudent workers in 1997 was 84 percent.
- The highest earnings were reported in health care and natural/applied science occupations. With respect to industry differences, the energy sector (mining, oil and gas) pays the highest salaries to university graduates, followed by the communications industry.
- The majority of employed nonstudents received health, dental and pension benefits in their 1997 jobs. University graduates are more likely than the employed population as a whole to receive such benefits.
- Overall, 37 percent of nonstudents who were employed in 1997 had received one or more promotions with their current employer. Gender differences were notable, with 33 percent of females compared with 44 percent of males having been promoted.
- Close to half of the employed (nonstudent) respondents in the AGS supervised others in their 1997 job. A higher proportion of males (54 percent) than females (40 percent) reported supervisory responsibilities.

Job Requirements

- Approximately two-thirds of employed nonstudents in 1997 were in jobs that required a university degree. Better-paid occupations were more likely to require a university degree.
- Just over one-quarter of all employed nonstudent AGS respondents felt overqualified for their current job, given their education, training and experience.
- A large majority (85 percent) of nonstudents employed in 1997 reported that acquiring particular job skills had been an important reason for their choice of university program.
- In terms of the overall self-reported fit between graduates' jobs and their university program, close to eight out of ten nonstudents indicated that their job was "somewhat" or "very related" to their program of studies.
- While 75 percent of the employed nonstudents claimed that their 1997 job was "very" or "somewhat related" to the *subject-area knowledge* they acquired at university, a larger proportion (86 percent) considered the *general skills and abilities* they had acquired in university to be "very" or "somewhat related" to their current job.
- Two-thirds of (nonstudent) AGS respondents reported that they made extensive use of their abilities to work independently and to work as a team in their current job. About 60 percent responded similarly with respect to speaking and problem solving skills, but only 43 percent stated that they made extensive use of their creative thinking abilities. Writing, computer literacy, and information management were used extensively by only about one-third of nonstudents in their current jobs.

- Graduates in professional jobs, compared with all other occupations, were more likely to state that they made extensive use of most of these skills. However, those in management occupations were somewhat more likely to report that they made use of their team work abilities, information management skills, and computer skills.

Quality of Working Life

- Overall, 71 percent of employed nonstudent members of the AGS sample reported that their adjustment to the workforce had been “somewhat” or “very easy.” Self-reported adjustment was more often assessed as “easy” by those from graduate-level professional programs in which students tend to be older and more established in their careers. Graduating from a co-op program made little difference in terms of self-reported assessments of adjustment to the workforce.
- Male graduates were more likely to report an easy adjustment to the labour market, as were older graduates, those who were married, and those with dependent children.
- Most nonstudent members of the AGS sample (71 percent) were “satisfied” or “very satisfied” with their current job. Self-employed graduates were more likely to report job satisfaction, compared to paid employees. Graduates in nonstandard jobs, in semiskilled or unskilled occupations, and those employed in the lower tier service industries were less likely to report job satisfaction.
- Just under half of both male and female nonstudents were “satisfied” or “very satisfied” with their career advancement opportunities and with their pay. A slightly higher proportion reported satisfaction with their benefit packages.
- Approximately 70 percent of male and female nonstudents were “satisfied” or “very satisfied” with their 1997 jobs in terms of opportunities to make decisions, opportunities to develop skills and abilities, and opportunities to do interesting and challenging work.

Introduction

This report contains a detailed analysis of findings from the *1997 Alberta Graduate Survey* (AGS), a follow-up survey of 6,012 individuals who graduated from Alberta's four universities in 1994. The AGS focused on employment outcomes and educational status in the two or more years since graduation from university. It is part of an on-going initiative between Alberta Advanced Education and Career Development (AAECD) and the province's post-secondary institutions to develop and analyze a database of performance indicators.

Alberta was the first Canadian province to link a portion of post-secondary education funding to performance. A *Performance Envelope* was established to allocate \$15 million to post-secondary institutions based on 9 key performance indicators (KPIs). The four goals of this KPI-based funding are:

- ✓ responsiveness
- ✓ accessibility
- ✓ affordability
- ✓ research excellence (universities only)

Only one of these underlying goals – responsiveness – is directly addressed in this report. Within the KPI framework, responsiveness is measured in two ways: via students' satisfaction with their program of study (assessed at the end of the period of study); and with graduates' employment outcomes two years after completing their program of study.¹ Data needed to assess student satisfaction were collected in 1996 via a four-university telephone survey. Each of the universities conducted their own analyses of the results. This report analyzes 1997 AGS data from graduates of all four universities with respect to the other component of responsiveness, namely, employment outcomes. The basic question guiding the design of the AGS and the following data analyses is: What kind of jobs do graduates get once they have completed their university education?²

Research Questions

This report focuses on the important contribution that post-secondary educational institutions make to human resource development in Alberta. We present AGS results on a wide array of employment outcome measures, for all four universities combined, as well as other useful data describing various characteristics of the (recent) university graduate population. We have made extensive use of tables and figures in order to present a comprehensive description of the AGS's findings. To ease the burden on readers,

¹ Specifically, the 1997 *Performance Envelope* allocated 20 points (of a possible 100) to student satisfaction (satisfied with overall quality). Another 20 points were allocated for employment (employed in jobs directly/somewhat related to program of study). See AAECD, *Encouraging Excellence and Rewarding Success* (1996: 11).

² See AAECD (1997), *Rewarding Progress Towards Goals*.

however, we have included in the text only the key tables and figures, relegating the rest to Appendix A.

The report is organized around data analyses addressing the following nine research questions:

1. What are the demographic characteristics of the *Class of '94*?
2. How have these graduates financed their university education?
3. To what extent have graduates continued to participate in the post-secondary education system, and what are their future education plans?
4. What is their labour force status in early 1997, approximately two and one-half years after receiving their degrees?
5. What are the work arrangements of graduates, specifically in terms of nonstandard work (part-time, temporary, multiple jobs) and self-employment?
6. In what kinds of occupations and industries are graduates employed?
7. How well are they paid, and what kind of job benefits do they receive?
8. To what extent do employed graduates report using, in their jobs, the skills, knowledge, and abilities acquired in university?
9. How do graduates assess their transition into the workforce and the overall quality of their jobs?

The main objective of the report is to inform policy decision-making in Alberta by providing a better understanding of graduates' transition into the labour market and further education. The report also is a valuable source of information for career planning. In addition, it contributes to a growing body of research on the labour market outcomes of a university education. Statistics Canada's *National Graduate Survey* has been conducting follow-up surveys of post-secondary graduates two and five years after leaving university since 1978.³ British Columbia is the only other province to have conducted a system-wide follow-up of university graduates and, within Alberta, some universities and faculties conduct more focused follow-ups.⁴ Universities in the Atlantic region have conducted a number of graduate follow-up surveys over varying time periods.⁵

What distinguishes the 1997 AGS from this previous research is its more in-depth analysis of a wider range of labour market outcomes, from work arrangements, income, and benefits to skill utilization and job satisfaction. Furthermore, by focusing most of this report on graduates who were no longer in the post-secondary system in 1997, we can evaluate more rigorously the labour market "pay-offs" of degrees from specific fields of study. By examining how labour market outcomes vary by occupation, industry and type of work arrangement, we are able to show that labour market location – and therefore

³ See Allen (1996), Wannell (1990), Wannell and Caron (1994), Finnie (1995), Human Resources Development Canada and Statistics Canada (1997), Little and Lapierre (1996) and Statistics Canada (1997c) for analyses based on NGS data.

⁴ Murphy and Coffin (1996), University Presidents' Council of British Columbia (1996).

⁵ See New Brunswick (no date), Baseline Market Research Ltd. (1996), Jackson (1997).

employer recruitment practices and job requirements – are central to understanding the relative success of graduates. In other words, we emphasize not only the *supply* side of the labour market equation (graduates' characteristics and qualifications), but also the labour market *demand* for university graduates in Alberta, thus broadening the discussion of the economic benefits of a university education.

Alberta Graduate Survey Methodology

This section of the report describes the sampling design, questionnaire content, data collection techniques, and response rates of the 1997 AGS. The entire project was conducted under contract by the University of Alberta's Population Research Laboratory (PRL), with the report's authors serving as Principal Investigators.

Sampling

Each university's Registrar provided the researchers with a machine-readable name/address/telephone list of 1994 graduates (defined as anyone who convocated in 1994). These databases also included program of study, degree, diploma or certificate obtained, year and month of graduation, age and gender. The university Registrars' cooperation at this early stage of the project was crucial, since time-lines were tight and some database reorganization was required to meet the needs of the AGS.

After reorganizing and randomizing the records within each university, PRL staff created a four-university database comprising 11,743 individuals who graduated in 1994 from Alberta universities. A verification check of the name, address and phone number information in the graduate population database revealed that 1,138 individuals had not provided phone numbers to their university. PRL staff searched CD-ROM phone directories to obtain numbers for 689 of these individuals (Table A1; see Appendix A).

Records from the two larger universities and from large faculties within them (e.g., Arts and Education at the University of Alberta, and Education at the University of Calgary) were held back in the early stage of interviewing. This strategy increased the odds of graduates from smaller universities and faculties being included in the sample.

Graduates living outside of Canada and the USA were not interviewed. Thus, the AGS does not allow generalizations to this small group of graduates who at the time of interviewing did not live in North America. Clearly, there would be merit in conducting a separate study of this group.

Questionnaire Design

The AGS questionnaire was constructed around measures of eight *Key Performance Indicators (KPI)*. Within the province's KPI framework, each university is required to

report these labour market and educational outcomes to AAECD on a biannual basis.⁶ The KPI measures (see questions 8, 10, 16, 17, 21, 27, 28 and 30 in the AGS questionnaire, Appendix B) are:

- labour force participation
- employment rate
- unemployment rate
- full-time employment
- part-time employment
- average monthly salary
- job related to program of study
- further enrollment in a post-secondary program

In addition, the AGS included a large number of complementary questions (see Appendix B) that provided depth and breadth to the analysis of the employment experiences of the *Class of 1994*. Questionnaires from other similar studies were examined for useful measures that might be included.⁷ During December 1996 and January 1997, a Steering Committee of representatives from the four provincial universities and AAECD screened various drafts of the questionnaire. The penultimate pre-test draft of the questionnaire and the overall data collection strategy were approved by a University of Alberta Research Ethics Committee.

In mid-January 1997, the questionnaire was pre-tested with 42 randomly selected respondents drawn from the population of 1994 graduates of the four universities. Pre-test results led to only minor changes to definitions and clarifications in interviewer instructions, so the completed pre-test interviews were included in the final count of 6,012 completed interviews.

Data Collection

The PRL collected data with a CATI (Computer Assisted Telephone Interviewing) system, using 18 workstations and a team of trained interviewers. Interviewing took place every day between January 29 and February 27, 1997.

Most sample members were contacted with ten or fewer phone calls. However, to reach the 6,000 sample-size target and to ensure adequate representation of smaller faculties and programs, many more than ten calls were needed in some cases. If a telephone call revealed that the graduate no longer lived at the location specified in the database, but the person answering could provide a new telephone number, the interviewer updated the

⁶ A Phase I report providing basic results for the eight KPI measures, for each university, each faculty within the universities, and selected programs within these faculties, was submitted to AAECD and each of the four universities in March 1997.

⁷ These included the National Graduate Survey; the University of Alberta follow-up survey of 1990 graduates; the 1996 Alberta Universities' Student Satisfaction Survey; the British Columbia follow-up survey of 1993 university graduates; the University of Alberta 1995 Graduation Survey; and the principal investigators' school-work transition surveys of university graduates.

database and began the phoning process again. In addition, if the person answering provided other useful tracking information (e.g., that the graduate had moved to a different community in North America), CD-ROM directories were used for further tracking.

A breakdown of callbacks for the 6,012 completed interviews reveals that:

- 18% were completed on a first call;
- 20% on a second call;
- 16% on a third call;
- 12% on a fourth call;
- 8% on a fifth call; and
- 26% took six or more calls to complete.

Examining the disposition of calls to the 5,731 graduates who were not interviewed for the AGS (Figure A1; see Appendix A), in 30% of these cases, the individuals were not known by the person who answered the phone and no further tracing information was obtained. In another 13% of cases, the number in the database was no longer in service and could not be updated using CD-ROM directories. A further 11% of the interview attempts were unsuccessful because interviewers, despite repeated callbacks, could not get past an answering machine. In a similar percentage of cases the individuals had left North America or otherwise were not unavailable (e.g., due to illness or death). There are seven additional smaller categories of reasons for being unable to contact graduates.

Completed Interviews

A total of 6,012 interviews were completed. This represents a response rate of 51% if all the 1994 graduates are used as the population base, or 53% if only those with a telephone number (whether correct or not) are counted (Table A1). Note that response rates are slightly higher for the two smaller universities, because of the sampling approach that increased the odds of graduates from smaller universities being contacted (see *Data Collection* section above).

The total number of graduates from each university and each faculty within it, together with the number of completed interviews for each of these units, is reported in Table A2. Using all graduates as the base, faculty response rates (not reported) varied between about 40% and 60%, no doubt reflecting differential rates of movement of graduates out of the province and the country.

Data Processing and Reporting

Prior to analysis, the data obtained in the 1997 AGS were cleaned to eliminate data collection errors. The data cleaning exercise focused on:

- correcting “wild codes” resulting from transcription mistakes during the interviewing process;
- ensuring that faculty and program of study classifications were correct;
- verifying some of the higher income responses; and
- comparing basic counts in programs and faculties against the KPI Reporting Manual list of “program standard names” to determine the units for which confidential and reliable data could be reported.

After discussions with AAECD officials, it was agreed that a “minimum number of respondents” cut-off rule of approximately 20 respondents would be used for reporting KPI results for specific faculties or programs within them. This cutoff guaranteed that confidentiality would be maintained, and that estimates for smaller reporting units would be reasonably reliable. While this report presents only a few basic KPI results comparing the four universities and focuses instead on comparisons across fields of study (see *Alberta’s University System* section below), similar guidelines for data reporting are employed. While a few estimates for sub-samples containing as few as 15 cases are reported, any generalizations based on sub-samples with fewer than 30 cases should be treated with caution.

Alberta’s University System

The analytic focus of this report is on the 1994 graduates of Alberta’s university *system*. This system-wide perspective is essential for assessing the labour markets, in Alberta and beyond, for university graduates. It is important, therefore, to recognize that while the four provincial universities possess distinctive institutional characteristics, they share common programs and their students complete degrees in a number of common fields of study.

Comparing the Four Universities

The University of Alberta and University of Calgary are full-service, research-intensive universities with large student populations at the undergraduate and graduate levels. The fact that each has numerous graduate programs, as well as medical and law faculties, distinguishes them from many other Canadian universities, and in particular from the two smaller Alberta universities, Lethbridge (UL) and Athabasca (AU). AU is unique, being the only university in Canada based on the principle of distance education. It does not run classes in the conventional sense. Both UL and AU are primarily undergraduate institutions. In 1994, AU had 196 graduates and UL had 888. This compares with 6,442 and 4,217 graduates from the U of A and U of C, respectively (Table A2). Thus on the basis of size and program diversity alone, a detailed comparative analysis of graduates of these four institutions would not be very meaningful.

However, with respect to the basic KPI indicators (see *Questionnaire Design* section above), AAECED has already examined and reported comparative data at the university, faculty, and (selected) program levels. Hence, in this section we briefly review results, at the university level, for the employment outcome and academic status KPI measures (Table 1). In our opinion, the differences observed largely reflect the varying size, mission, number and mix of programs, and student populations of the four institutions. All subsequent analyses in this report compare fields of study across the four universities.

Table 1: Summary of 1997 Employment Outcomes and Academic Status by University, 1994 Graduates¹

	All Alberta universities	Athabasca University	University of Alberta	University of Calgary	University of Lethbridge
Number of respondents	6012	124	3215	2198	475
Labour force participation rate (%)	89.0	92.7	88.1	89.8	89.9
Employment rate	95.1	93.0	95.5	94.8	95.1
% employed full-time	82.4	90.7	81.1	83.9	82.2
% employed part-time	17.6	9.3	18.9	16.1	17.8
Unemployment rate (%)	4.9	7.0	4.5	5.2	4.9
Current job related to program of study (general skills and abilities acquired):					
% Very	45.6	34.6	42.3	37.8	43.0
% Somewhat	39.6	43.9	35.5	36.9	35.6
% Not very	9.5	15.0	13.4	15.9	13.1
% Not at all	5.3	6.5	8.8	9.4	8.4
Median monthly salary, all employed	\$2,797	\$3,271	\$2,833	\$2,722	\$2,583
Median monthly salary, full-time employed	\$3,000	\$3,333	\$3,327	\$2,917	\$2,750
% currently enrolled in a post-secondary program for credit	23.4	29.8	24.4	22.9	17.7
% of enrollments that are full-time	74.0	37.8	77.0	72.0	73.8
% of enrollments that are part-time	26.0	62.2	23.0	28.0	26.2

1. As reported at the time of the survey in January-February 1997.

Perhaps the most interesting observation we can make about Table 1 is the convergence among the four universities with respect to labour market outcomes. It is not at all surprising that AU grads report the highest incomes, for this is a group of somewhat older individuals who had considerable work experience prior to entering their program. Similarly, the somewhat lower incomes reported by UL grads reflects the fact that this university does not have law, medicine or engineering programs, as well as the narrower range of employment opportunities found in smaller communities compared with major urban centres.

Comparing Fields of Study

In this report, our analytic focus is on how student composition, labour market outcomes, and educational activity in the several years after graduation vary by the types of studies completed within different faculties and programs, that is, by *field of study (FoS)*. Consequently, for the remainder of this report, we do not compare results at the university level. Instead, we use a field of study classification system that groups graduates from all four universities into a single set of field of study categories.

Table 2: Field of Study by University, 1994 Alberta University Graduates

Field of Study	UNIVERSITY				
	Athabasca	Alberta	Calgary % (n)	Lethbridge	Total
Fine Arts	~	2.1 (67)	3.4 (75)	5.3 (25)	2.8 (167)
Social Sciences	37.9 (47)	10.8 (346)	20.6 (452)	18.7 (89)	15.5 (934)
Humanities	4.8 (6)	3.1 (99)	5.7 (125)	7.4 (35)	4.4 (265)
Business/Commerce	50.0 (62)	6.9 (221)	11.1 (245)	24.2 (115)	10.7 (643)
Education	~	21.3 (685)	14.6 (321)	15.6 (74)	18.0 (1080)
Physical Education/ Kinesiology	~	2.8 (90)	3.0 (65)	7.2 (34)	3.1 (189)
Engineering	~	5.8 (188)	3.9 (86)	~	4.6 (274)
Law	~	2.6 (82)	1.4 (31)	~	1.9 (113)
Medicine/ Dentistry	~	2.7 (86)	1.3 (28)	~	1.9 (114)
Nursing	7.3 (9)	4.3 (138)	2.6 (57)	6.1 (29)	3.9 (233)
Other Health Professions	~	6.1 (196)	0.0 (1)	~	3.3 (197)
Social Work	~		3.5 (77)	~	1.3 (77)
Math/Physical Sciences	~	5.3 (172)	5.8 (127)	4.4 (21)	5.3 (320)
Biological Sciences	~	5.5 (176)	3.9 (86)	4.6 (22)	4.7 (284)
Agriculture/Forestry/ Earth Sciences	~	4.0 (130)	3.1 (68)	2.5 (12)	3.5 (210)
M.A.	~	2.7 (88)	4.1 (91)	~	3.0 (179)
M.Ed.	~	4.2 (134)	2.4 (52)	3.8 (18)	3.4 (204)
M.Sc./M.Eng.	~	4.5 (144)	3.5 (78)	.2 (1)	3.7 (223)
M.B.A.	~	1.0 (31)	2.2 (49)	~	1.3 (80)
M.S.W./M.N.	~	1.0 (33)	2.0 (45)	~	1.3 (78)
Ph.D.	~	3.4 (109)	1.8 (39)	~	2.5 (148)
Total %	100.0	100.0	100.0	100.0	100.0
Total (n)	(124)	(3215)	(2198)	(475)	(6012)

The field of study concept is central to our analysis of the relationship between universities and labour markets. Indeed, many studies using the *National Graduate Survey* (NGS) also use FoS as a core variable.⁸ However, the classification of FoS usually depends on the research or policy questions being addressed, so there is no consensus regarding its specific conceptualization and measurement. Researchers must strike the right balance among the following goals: 1) ensuring that categories are as homogenous as possible with respect to the different programs they encompass; 2) creating enough

⁸ See, for example the classifications used by Bowlby (1996), Davies, Mosher and O'Grady (1996), Finnie (1995), Little and Lapierre (1996), Wannell (1990), and Wannell and Caron (1994).

categories to allow detailed assessments of the outcomes of graduates from specific faculties or programs; 3) ensuring adequate sub-samples sizes so that reliability and confidentiality can be assured; and 4) creating a classification system that has a manageable number of categories for ease of data presentation.

Our approach is presented in Table 2. Using 15 undergraduate (including Law and Medicine/Dentistry which, essentially, lead to second undergraduate degrees) and six graduate FoS categories, we are able to preserve the integrity of most of the programs offered by the province's four universities. At the same time, the categories are large enough to allow fairly detailed assessments of the post-graduation experiences of different sub-sets of graduates (e.g., women and men) from many specific faculties or degree programs.

Several FoS categories combine graduates from different faculties because of small sample sizes. With respect to undergraduate programs, Medicine and Dentistry are combined since both fields of study lead to similar, well-paid, professional careers. The "other health professions" category includes small numbers of graduates from pharmacy, rehabilitation medicine, dental hygiene, and medical lab science programs. Agriculture and forestry graduates are combined with graduates from earth sciences (e.g., geology), ecology, food and nutrition, and clothing and textiles programs. For graduate programs, we have combined recipients of M.S.W. (social work) and M.N. (nursing) degrees since, to some extent, the labour markets entered by graduates of these two programs are similar. Graduates who received M.Sc. and M.Eng. degrees are combined for the same reason.

The FoS categories vary in sample size from 1080 respondents in Education to only 78 in the combined M.S.W./M.N. field of study. Many of the FoS categories apply only to the U of A and the U of C, since most of the graduates from AU and UL received undergraduate arts, education, or business degrees. Overall, 85 percent of the AGS respondents (n = 5,100) received undergraduate degrees in 1994, while 15 percent (n = 912) received graduate degrees.

Profiling Alberta's University Class of '94

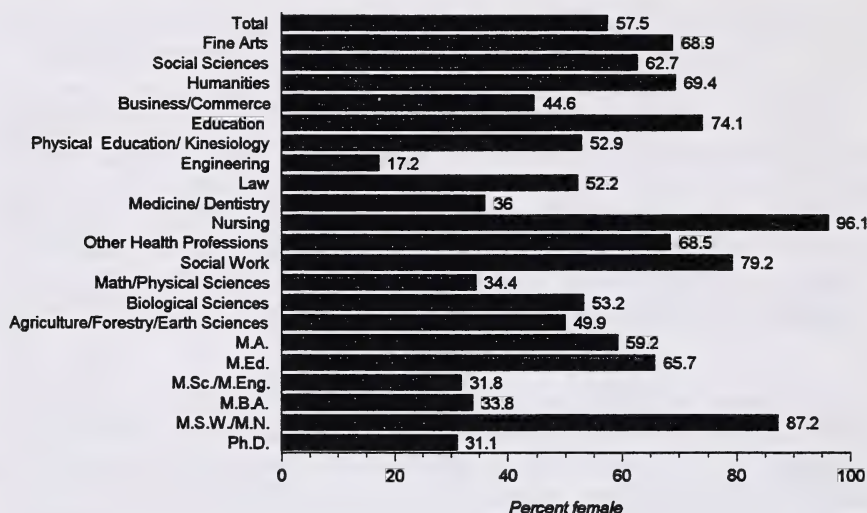
Demographic Characteristics

Who are the university graduates of 1994? In this section, we answer this question by providing a demographic profile of the 1997 AGS sample. Figures 1 (below) and A2 through A4 (see Appendix A) present gender, age, marital and family status, and visible minority status breakdowns by FoS.

Beginning with gender (Figure 1), we draw attention to two key findings. First, 58 percent of the graduates from Alberta universities in 1994 were female, which is slightly

higher than the national average of 56 percent.⁹ Still, the traditionally female professions of nursing, social work and education are more attractive to women, while men are considerably over-represented in the fields of engineering, mathematics and physical sciences, M.B.A. programs, and professional medicine and dentistry programs. As we will observe throughout the following analyses, the concentration of men and women in distinct fields of study is directly linked to gender differences in employment outcomes.

Figure 1: Gender by field of study, 1994 Alberta university graduates



There are also variations by FoS in the age of graduates. We examine this issue using three age categories: early 20s, mid- and late-20s, and 30 years of age and older (Figure A2). At the undergraduate level, with the exceptions of professional faculties of education, law, medicine/dentistry, and social work, between 50 to 70 percent of undergraduates receiving degrees in 1994 were in the youngest age category (20 to 24). Even though law, medicine/dentistry, and social work are undergraduate programs, they draw on an older population, in part because admission often requires a prior degree. As for education, some undergraduate students are former teachers, coming back to university to complete a first degree, while others are students who have moved into education after beginning their studies in another field. But since between one-third and one-half of the graduates from education, law, nursing, and social work are in their 30s,

⁹ Calculations from 1994 data provided by Statistics Canada (1997b; Tables 38-41).

we also observe some other demographic differences, specifically, these students are more likely to be married and to have families (Figure A3).

At the graduate study level, the majority of 1994 graduates were in their 30s, although the proportion of older students was somewhat smaller for M.A., M.Sc. and M.Eng. programs. Unlike other graduate programs which students may enter after some full-time work experience, students frequently move directly from undergraduate programs into M.A., M.Sc., and M.Eng. programs.

As suggested, age is related to marital and family status. The undergraduate programs with older-than-average age profiles also have more graduates who are married or living with partners and who have dependent children (Figure A3). Sixty percent or more of education, nursing, and social work graduates were married (when interviewed in 1997), compared to 51 percent for all survey respondents. Similarly, about one-third of the graduates in these fields of study had dependent children in 1997, considerably higher than the overall average of 24 percent. Among those with graduate degrees, a large majority was married when surveyed in 1997 and between one-third and one-half had dependent children. While the 1997 AGS did not ask about marital or family status during respondents' time in university, we can surmise that much larger proportions of graduate students might require assistance with child-care while studying for their degrees.

The Alberta university graduate population also is racially and ethnically diverse. Almost 14 percent of the 1997 AGS respondents identified themselves as a member of a visible minority group (Figure A4), which is somewhat higher than the provincial average of 9 percent as estimated by the 1991 Census.¹⁰ Field of study variations in this regard are substantial. For example, more than one in five engineering, medicine/dentistry, other health profession, math/physical science, biological science, M.Sc. and M.Eng. and Ph.D. graduates identify themselves as members of a visible minority group.

However, only 1.4 percent of the 1997 AGS respondents identified themselves as being of Aboriginal origin (field of study comparisons are not provided because of small sub-sample sizes). Thus, while visible minorities are over-represented in the Alberta university graduate population, Aboriginal graduates remain significantly under-represented, given that approximately 4 percent of the Alberta population are of Aboriginal origin.¹¹

Only 3.1 percent of the 1997 AGS respondents stated that they had a disability that might disadvantage them in terms of employment (field of study comparisons are not reported). While direct comparisons to population figures are not possible (because of different question wording and age comparisons), it appears as if the disabled might also be under-

¹⁰ 1991 Canadian Census data indicate that 9 percent of the Alberta population aged 15 and older identify themselves as a member of a visible minority group (Statistics Canada, 1996: 3).

¹¹ The 4 percent figure (for all ages) is calculated from data from the 1991 *Aboriginal Peoples Survey* (Normand, 1996: 13).

represented in the university graduate population, since approximately 8 percent of Canadians aged 15 to 34 report themselves as having some kind of disability.¹²

Student Status and Labour Market Experience

To round out this profile of the Alberta university Class of '94, we examine student status and labour market participation prior to graduation. The vast majority (91 percent) of graduates had been enrolled *mainly* full-time in their programs of study (Figure A5). There is little variation in this regard among undergraduate programs, with the exception of nursing where only 78 percent were primarily full-time students. At the graduate level, M.B.A. and M.Ed. students were evenly split between full- and part-time studies, while other programs had mainly full-time students. For all undergraduate programs, the average length of time taken to complete the degree granted was 4.6 years, compared with 3.5 years for all graduate programs.

Enrollment data collected by Statistics Canada from post-secondary institutions reveal that, during the first half of the 1990s, part-time university enrollments were lower in Alberta than in other provinces, and that across the country part-time enrollments were declining while full-time enrollments were increasing. Thus, in 1990-91, 37 percent of all university students in Canada were enrolled part-time, compared to 27 percent in Alberta. In 1994-95, the figures were 33 percent and 25 percent respectively.¹³ The lower proportion of part-time students estimated by the 1997 AGS is a function of both sampling (only graduates were surveyed, not all students) and measurement (the AGS asked whether students were *mainly* full-time or part-time). However, the more difficult labour market for youth across the country in the first half of the 1990s probably explains the decline in part-time enrollments. As youth labour force participation dropped dramatically over this period, more students may have decided to attend university full-time. An explanation for the lower proportion of part-time enrollments in Alberta across this period is not as easily determined.

As the youth labour market became more difficult in the 1990s, policy debates began to focus on approaches to improving school-work transitions for youth and on ways of better preparing graduates for the rapidly changing work world.¹⁴ Co-op and other work experience programs that combine periods of study and work have been promoted as effective responses.¹⁵ It is noteworthy (Figure A6) that just 6 percent of 1994 Alberta university graduates were in co-op or work experience programs. Engineering and social work programs were most likely to offer co-op education opportunities, although such work-study options were also reasonably common in the "other health professions" category.

A final, and related, issue concerns the work experience of university graduates. Student employment is a long-standing feature of the Canadian labour market. For students, it is a

¹² Statistics Canada (1992: 8).

¹³ Calculations from data in Statistics Canada (1997b; Table 12).

¹⁴ See Krahn (1996) for a discussion of research and policy issues regarding school-work transitions.

¹⁵ See Darch (1995) on labour market outcomes for university co-op graduates.

way of paying for their education and, depending on their job opportunities, useful preparation for post-graduation employment. Thus, 58 percent of 1994 graduates were employed at some point in the last year of their program, the majority on a part-time basis (Figure A7). But also note the wide differences across fields of study, from only 9 percent in medicine/dentistry and 28 percent in engineering, to 70 percent or more in fine arts, humanities, M.Ed. and M.B.A. programs. With respect to the latter two programs, a considerably higher proportion of students had been working full-time while completing their program of studies. Some of these individuals may have been attending university, not to begin careers, but to upgrade careers already underway.

Financing Their University Education

The cost to individual students of a university education has been rising across the country throughout the 1990s. In Alberta, post-secondary institutions have tried to offset declining provincial funding by increasing tuition fees by around 10 percent annually, the maximum allowed by the provincial government. This decade also has been a difficult one for young people seeking part-time “student” jobs. Even though the 1997 AGS reveals that 58 percent of the 1994 graduates had held a job in the last year of their program, there is evidence from other sources that the student employment rate has declined since the 1980s.¹⁶ Consequently, the need to borrow money to obtain a university education has been increasing. While this cross-sectional survey cannot determine if student debt load is increasing in Alberta, it can provide an accurate picture of the extent of education-related debt among 1994 university graduates. Figure 2 demonstrates that 57 percent of graduates had student loans and/or other education-related debt when they graduated. Just over half (52 percent) had student loans, while 18 percent reported other education-related debt.

At the undergraduate level, with a few exceptions, there are not large differences across fields of study in the proportion of graduates with education-related debt. But we do observe higher proportions with debt among graduates from medicine/dentistry, law, and other health professions. Since most of these graduates would have spent a higher than average number of years completing their studies, the higher proportions with debt are understandable.

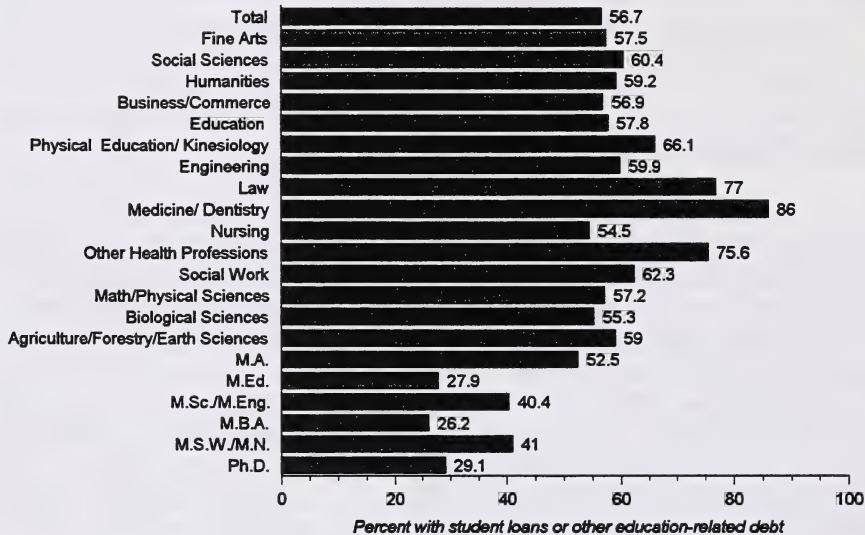
On average, graduate students are less likely to incur debt to finance their studies. Recalling the extensive full-time employment, and older age profile, of M.Ed. and M.B.A. graduates, it is not surprising that less than 30 percent went into debt to finance their education.

We also examined how combined education-related debt varies by gender, age, and student employment during their last year of study (Figure A8). Gender differences are negligible. Students aged 30 and older have the lowest incidence of debt, while those in

¹⁶ See Betcherman and Leckie (1997) on changes in the Canadian youth labour market.

the 25 to 29 age group have the highest – no doubt a reflection of their concentration in professional programs that require a prior degree. Working part-time in the last year of one's program makes little difference regarding the probability of graduating with debt, but having worked full-time does appear to reduce the need for debt financing of one's education.

Figure 2: Student loans and other education-related debt at the time of graduation by field of study, 1994 Alberta university graduates



The 57 percent of respondents reporting combined education-related debt graduated with an average debt of \$15,293 (Figure 3). Student loans comprise the largest share of this debt, averaging \$14,161, while other education-related debt (reported by 18 percent of respondents) averaged \$7,579. It is clear from Figure 3 that the total debt load in most field of study categories is in the \$13,000 to \$15,000 range. Graduates from medicine/dentistry and law stand out as far above the average, while those who received M.A. and M.Sc./M.Eng. degrees were somewhat higher than average.

These findings provide useful hard evidence that can inform public discussions about the rising costs of university education. While recent media reports of many students graduating with debts in the \$25,000 range are not reflected by the AGS results (for 1994 graduates in a province with a stronger economy than most other provinces), the fact that almost six in ten 1994 Alberta university graduates had, on average, over \$15,000 in education-related debt raises a host of policy issues. To what extent is the rising cost of university attendance a barrier to specific groups of prospective students? What financial support alternatives, including an income-contingent student loan system, are most appropriate to meet students' needs? Is a single funding model realistic, given the diverse student population in the province? Alternatively, why are 43 percent of students able to

graduate debt-free? Is it because they come from more affluent socioeconomic backgrounds, have families who have gone into debt on their behalf, or have access to better summer and part-time jobs?

Figure 3: Mean combined student loan and other education-related debt at the time of graduation by field of study, 1994 Alberta university graduates



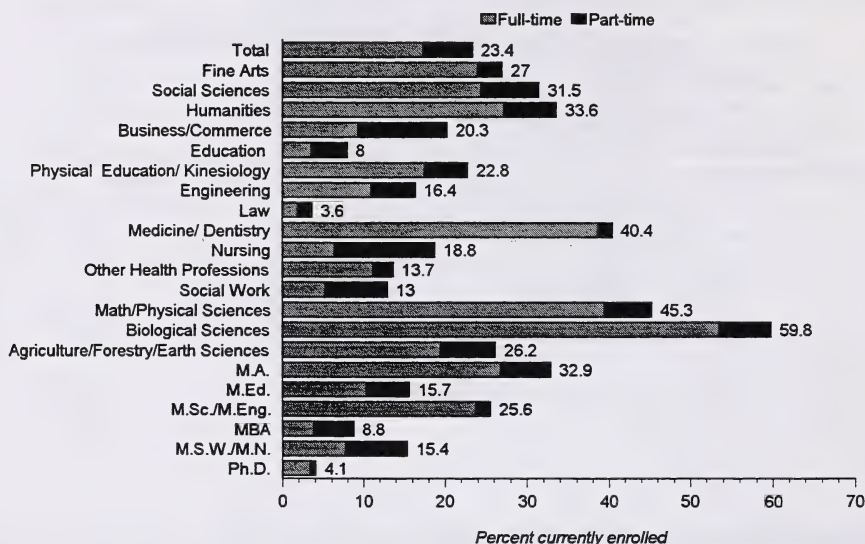
Are 1994 Graduates “Life-long Learners”?

The links between education and the labour market are changing. The emergence of a knowledge-based economy has led to a recognition that continuous human resource development is vital for individual career success, as well as for a strong economy. In the 1990s, the concepts of the “learning organization” and “life-long learning” have become commonplace. Research from the 1980s suggests that already well-educated workers are the most likely to actively participate in further education and training.¹⁷ This section of the report addresses the question: To what extent is the Class of ‘94 engaged in life-long learning, either by continuing to enroll in credit courses or programs, or by planning to do so in the near future. Granted, this is a limited perspective on life-long learning, leaving out workplace training and informal learning, for example. However, it does reveal how Alberta universities enable graduates to continue learning and developing their human capital.

¹⁷ Lowe (1992); Betcherman (1993); Lowe and Krahn (1995); Human Resources Development Canada and Statistics Canada (1997).

A total of 37 percent of 1994 graduates had enrolled in further post-secondary credit programs at some point in the following two and one-half years (Figure A9). Most of this further formal education was on a full-time basis, indicating that for many students one degree is a stepping stone to another. In fact, one-quarter of all 1994 graduates had enrolled on a full-time basis, compared to only 11 percent on a part-time basis. Large majorities of math/physical science and biological science graduates (59 and 74 percent, respectively) had pursued additional post-secondary education, as had roughly half of all graduates from Arts programs (fine arts, humanities, and social sciences). At the graduate level, individuals in M.A. and M.Sc. and M.Eng. programs were most likely to have continued their education (probably by entering doctoral programs).

Figure 4: Current (1997) full-time and part-time enrolment in post-secondary programs for credit by field of study, 1994 Alberta university graduates



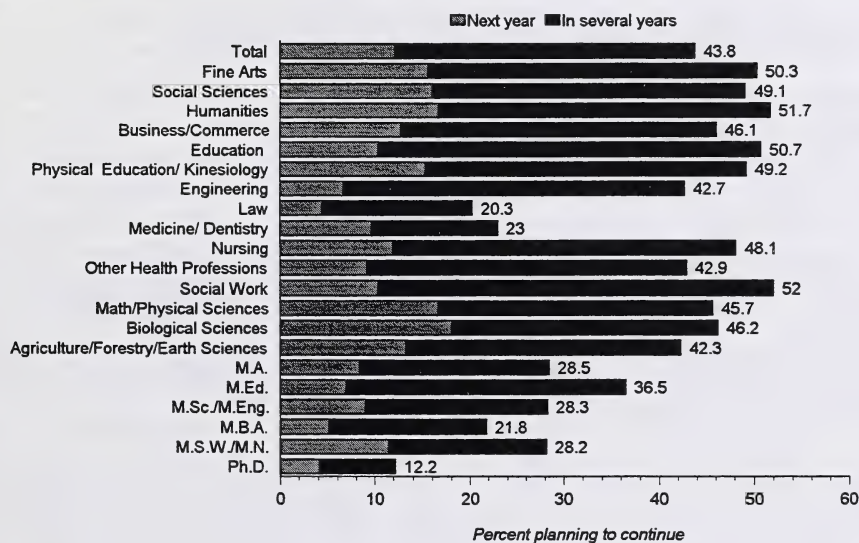
We see in Figure 4 that just under one-quarter of 1994 graduates were enrolled when interviewed in 1997. Again, most were full-time students (17 percent of all respondents). The FoS enrollment patterns for 1997 are similar to those for the entire post-graduation period (as reported in Figure A9). Breaking down 1997 enrollment trends by gender, age, marital and family status, and education-related debt, we find that variations by gender and debt are minor (Figure A10). More interesting is how full-time enrollment declines sharply among students who are over the age of 24, married, and have dependent children. This suggests that one's stage in the life-course has a major influence on decisions to pursue further post-secondary education.

What type of post-secondary programs have 1994 graduates chosen? Both in terms of any enrollment since 1994, and current 1997 enrollment, university graduate programs are the most common destinations (35 and 40 percent, respectively; see Figure A11). Next come

university undergraduate programs, followed by university professional programs. Interestingly, only 12 percent of the university Class of '94 pursued further education at community colleges or technical institutes (9 percent of those enrolled in 1997). Professional certification – for example, required for careers in law, accounting and engineering – comprising 9 percent of all post-graduation enrollments and 7 percent of those in 1997.

It is also evident from the 1997 AGS that the post-secondary “careers” of many members of the Class of '94 will continue into the future. Figure 5 shows that fully 44 percent intend to enroll in another post-secondary program for credit. About 12 percent intend to do so in the coming year, while 32 percent are planning further formal education in several years time.

Figure 5: Plans to continue post-secondary education after 1997 by field of study, 1994 Alberta university graduates



Future educational plans are to some extent influenced by gender, age, and marital and family status (Figure A12). Specifically, female graduates and those who are younger, single, and do not have dependent children are somewhat more likely than their respective comparison groups to have such plans. Similarly, current students are less likely than are graduates who have left the educational system to plan further educational activity. This is an interesting finding, because it suggests considerable movement in and out of post-secondary institutions after graduation. Finally, although the pattern is not easily explained, AGS respondents with higher levels of education-related debt in 1994 were somewhat more likely to be planning additional education in 1997.

Labour Force Status in 1997

We now shift our attention to the post-graduation employment experiences of the Class of '94. The basic question we address is: How are these graduates faring in the labour market two-and-a-half years after receiving their degree? Because about one in four of these 1994 graduates were in the post-secondary education system at the time of the 1997 AGS, it is important to distinguish their labour market status from their former classmates who were *nonstudents* in 1997. This important distinction recognizes that continuing students often occupy transitory locations in the job market – essentially performing 'student jobs' – that typically do not reflect the true market value of their credentials. So, for a clearer picture of how successfully Alberta university graduates have been able to transform their degrees into labour market rewards, we focus primarily on nonstudents in the following analyses.

Labour Force Participation

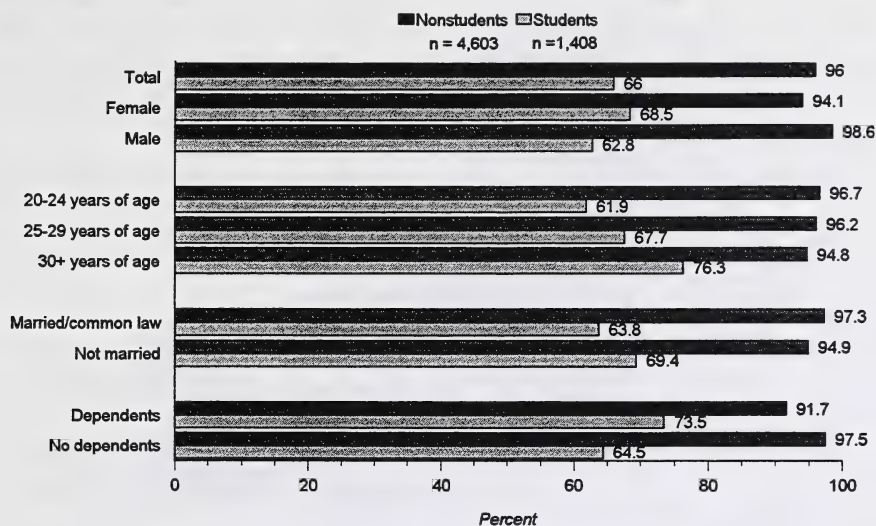
Our starting point for analyzing the labour market outcomes of the Class of '94 is an examination of their labour force participation (LFP) rates. Figure 6 compares LFP rates among students and nonstudents in 1997. Overall, two-thirds of AGS student respondents were in the labour force (that is, either employed or out of work but looking for a job) compared with 96 percent of nonstudents. By any standard, the LFP rates of nonstudents are very high. For example, the overall participation rate for males and females combined (age 15 and older) in Alberta in 1997 is around 72 percent.¹⁸ Focusing on nonstudents, there are only minor variations in LFP rates by gender, age, and marital status. Women, older graduates, and graduates who were married or had dependent children reported slightly lower LFP rates, but even in these groups over 90 percent of AGS nonstudent respondents were in the labour force when interviewed in 1997.

We also find only very minor variations in LFP rates by field of study among nonstudents (Figure A13). Remarkably, engineering graduates and respondents who had acquired an M.B.A. reported 100 percent labour force participation, and several other groups came very close to this level (e.g., graduates of law, business/commerce, and M.S.W./M.N. programs). The lowest LFP rates are observed among humanities and MA graduates but, again, these rates are still in excess of 90 percent.

Although very few of the AGS respondents were not in the labour force (only 6 percent in total), it is still useful to examine the reasons for this. Of the 380 respondents (students and nonstudents combined) who were neither employed or looking for a job when surveyed in 1997, 68 percent gave "going to school" as the main reason for not looking for work, while 15 percent mentioned family or personal responsibilities. Indicative of the strong work ethic among these university graduates, almost none indicated no interest in finding a job or stated that they had given up looking for work, believing no jobs were available (there were only two AGS respondents in each of these categories).

¹⁸ Estimates from Statistics Canada's monthly *Labour Force Survey*.

Figure 6: Labour force participation rates in 1997 among students and nonstudents by selected characteristics, 1994 Alberta university graduates



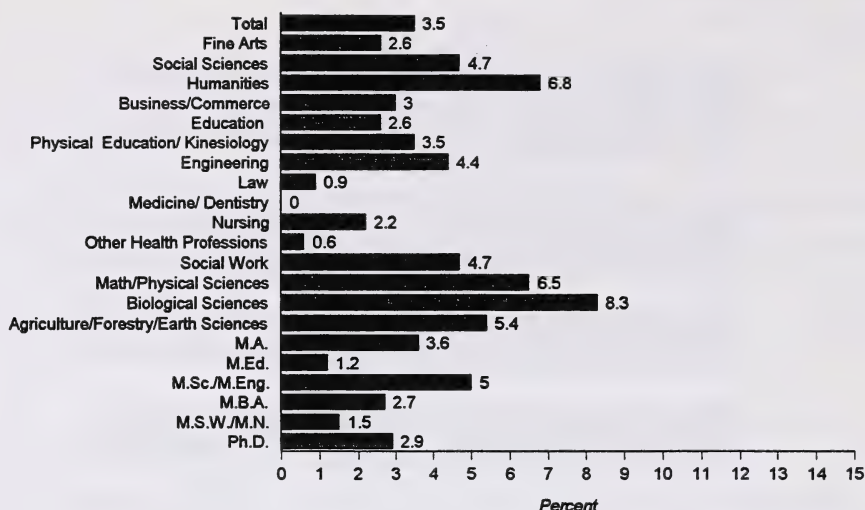
Unemployment

Youth unemployment has again become a prominent public policy concern, as it was during and after the recession of the early 1980s. While there have been periods in the past two decades when some groups of Alberta university graduates reported relatively high unemployment rates, the mid-1990s is not one of them. In fact, with Alberta's strong economic growth and job creation over the past several years, university graduates generally have been among the beneficiaries; youth without any post-secondary education have been the losers.

This conclusion is clearly reflected in the unemployment rates presented in Figure 7. A mere 3.5 percent of nonstudents in the Class of '94 were out of work and looking for a job (the official definition of unemployment) when interviewed in the spring of 1997. The unemployment rate was marginally higher among males, younger graduates, and those who were married (Figure A14). The overall nonstudent unemployment rate was well below the 1997 provincial average of about 6 percent and the national average of about 9 percent.¹⁹ However, among nonstudents, differences across field of study were observed, with unemployment rates ranging from 0 to over 8 percent (Figure 7). The highest rates were found among biological sciences, humanities, and math/physical science graduates.

¹⁹ Estimates from Statistics Canada's *Labour Force Survey*.

Figure 7: Unemployment rates in 1997 among nonstudents by field of study, 1994 Alberta university graduates



We also observe considerably higher unemployment rates (over 11 percent) among AGS respondents who were (still/once again) students when interviewed. While very few 1994 university graduates who had left the formal education system were having trouble finding work, a larger proportion of continuing students were encountering difficulties finding jobs to help finance their education.

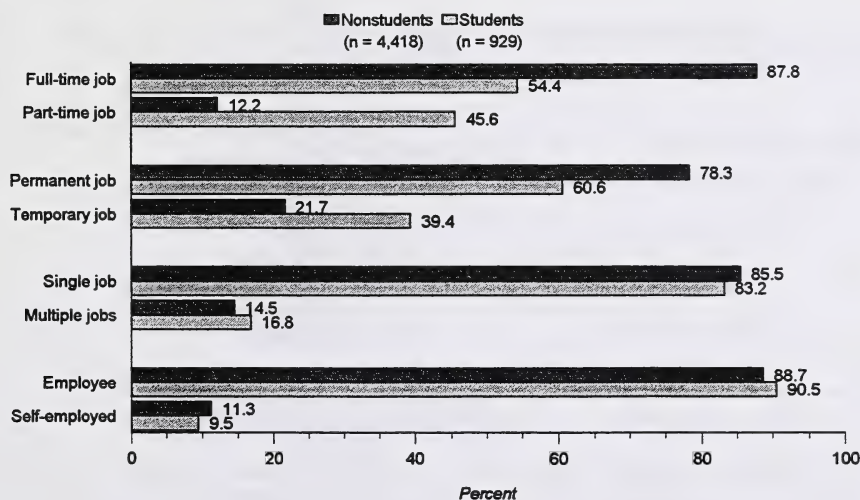
Work Arrangements

Paid work can take many forms in today's labour market. There has been a noticeable shift away from traditional full-time, secure employment to a variety of other work arrangements. Increases in part-time jobs, contract work, and multiple job holding – these are the labour market trends that raise concerns about a polarization in job quality and rewards. There also has been an increase in self-employment, especially in the province of Alberta. In this section of the report, we document the prevalence and distribution of these work arrangements in 1997 among members of the Class of '94.

Figure 8 highlights these different types of work arrangement by comparing their rates among students and nonstudents in the AGS sample. The comparisons reinforce our earlier observation that the two groups occupy quite different labour market positions. Simply stated, nonstudents are far more likely to occupy full-time, permanent jobs. A

high proportion (88 percent) of nonstudent members of the 1997 AGS sample reported holding full-time jobs compared to only 54 percent of students. Thus part-time employment is relatively low (12 percent) among nonstudents, given that the national average in 1997 (all ages and both sexes combined) has been around 19 percent.²⁰ The average work week in 1997 was 44.7 hours for nonstudents in full-time jobs, compared with 18.4 hours for those working part-time.

Figure 8: Work arrangements among students and nonstudents in 1997, 1994 Alberta university graduates



But while only 12 percent of nonstudents were in part-time jobs, more than one in five (22 percent) reported temporary jobs (although this was still much lower than the 39 percent temporary employment rate among students). About one in six AGS respondents reported holding more than one job when interviewed, with a slightly higher rate among students. Alternatively, about one in ten respondents were self-employed, with a slightly higher rate among nonstudents. Neither group exhibited a self-employment rate anywhere near the current Alberta average of about 20 percent.²¹

Nonstandard Work

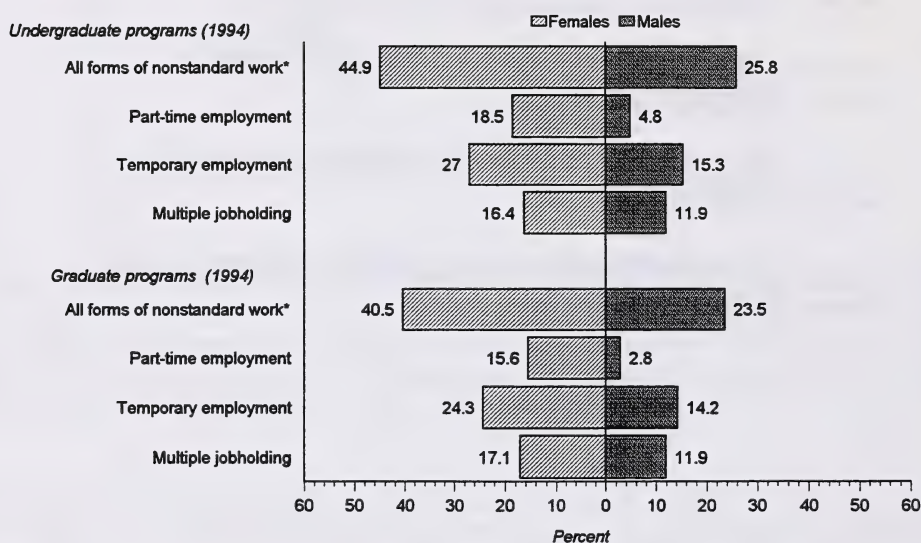
Labour market analysts frequently combine part-time work, temporary employment, and multiple job holding into a single *nonstandard work* category (individuals in more than one of these three categories are counted only once). The implicit comparison group is

²⁰ Estimates from Statistics Canada's *Labour Force Survey*.

²¹ Estimates from Statistics Canada's *Labour Force Survey*.

workers in full-time and permanent jobs. According to Figure 9, over 40 percent of female nonstudents and about one in four males who had not returned to school were in the nonstandard work category in 1997, two and one-half years after graduation. AGS respondents who had completed graduate programs in 1994 were somewhat less likely to be in a nonstandard job. While part-time jobs constitute the largest share of nonstandard employment in the labour force as a whole,²² for recent university graduates temporary employment is the most common type of nonstandard work, particularly for women (Figure 9). Indeed, 27 percent of female graduates of undergraduate programs and 24 percent of those who had completed graduate programs were in temporary positions in 1997 – almost twice the rate for males.

Figure 9: Nonstandard work arrangements* among nonstudents in 1997 by gender and program level, 1994
Alberta university graduates



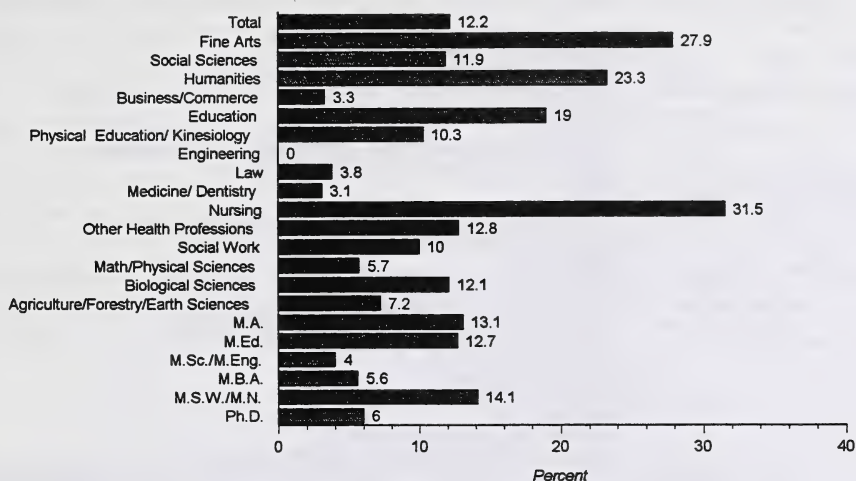
* Nonstandard work includes one or more of part-time work, temporary work, and multiple job holding. People in more than one type are counted only once.

How do nonstandard work arrangements vary by field of study? Part-time employment rates (among nonstudents) are highest among nursing, fine arts, humanities, and education graduates (Figure 10). These programs stand in sharp contrast to engineering, medicine/dentistry, law, and M.Sc./M.Eng. programs, all of which have part-time employment rates of 4 percent or less. In fact, none of the nonstudent engineering graduates in the AGS sample were working part-time when interviewed. Above average temporary employment is observed among fine arts, education, physical education, medicine/dentistry, and biological sciences graduates, as well as among recipients of doctoral degrees (Figure 11). In terms of multiple job holding (Figure A15), above

²² See Krahn (1995).

average rates are evident among graduates of fine arts, humanities, nursing, M.A., and M.S.W./M.N. programs.

Figure 10: Part-time employment in 1997 among nonstudents by field of study, 1994 Alberta university graduates



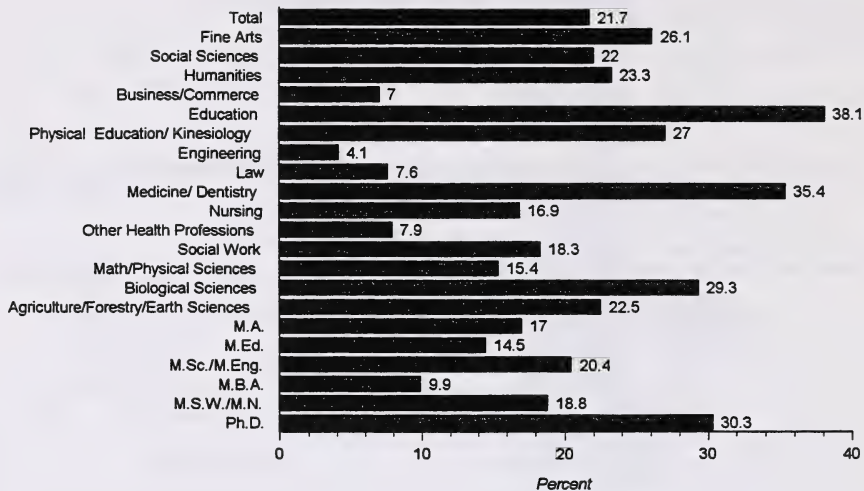
The high incidence of nonstandard work in some fields of study – particularly nursing and education – results in large part from budget cutbacks and work reorganization in the province's public sector since 1993. Relatively high rates of temporary employment for medicine/dentistry reflect how entry to these professions is organized, either through internships and residency requirements or short-term contract positions. Similarly, doctoral graduates typically face intense competition for tenure-track university jobs or permanent research positions. In either case, the tenuous employment contracts do not necessarily reflect negatively on job content, or remuneration. Yet the same may not apply for fine arts, humanities or some science graduates, for whom nonstandard work may also bring with it below-average job rewards. These are issues to which we return later in the report. For now, it is important to recognize that nonstandard work is common in a wide range of professional employment situations.

We have already established that nonstandard work is more prevalent among female university graduates. This, in part, is due to the high proportion of women in nursing, education, fine arts and humanities, fields in which graduates tend to enter areas of the labour market characterized by nonstandard work. At the same time, we know from prior research that mothers with young children often seek employment flexibility to deal with family responsibilities.²³ Such an explanation also fits the pattern of results observed in

²³ See Duffy and Pupo (1992).

the 1997 AGS (Figure A16). Women who are 30 years of age or older, married, and have dependent children report the highest part-time work rates. Note that male part-time work rates are uniformly low, regardless of age, marital status, or family status.

Figure 11: Temporary employment in 1997 among nonstudents by field of study, 1994 Alberta university graduates



However, when asked why they worked part-time, 37 percent of both women and men in the nonstudent category indicated that they could not find full-time employment. Only 22 percent of female nonstudents in part-time positions (and virtually none of the nonstudent males working part-time) indicated that family or personal reasons were the main reason. Thus, while family responsibilities may lead to a choice of part-time employment among some female university graduates, the realities of the labour market are more often responsible for part-time employment among both female and male university graduates.

We also examined the demographic correlates of temporary employment among nonstudent university graduates (Figure A17). The pattern here is somewhat simpler: women are much more likely to be in temporary jobs while age, marital status, and family status are of little consequence. Since the 1997 AGS did not ask respondents why they were in temporary jobs, we cannot explore the issue of choice versus necessity as we did with part-time employment.

Self-employment

Self-employment is another type of work arrangement that has become more common in the past decade. Today, approximately 16 percent of Canadian workers and 20 percent of Albertans are self-employed, and job growth is faster in this area than among paid employees. One might expect that recent university graduates would be well represented among the self-employed, but this is not the case (Figure A18). Indeed, only 11 percent of the nonstudent members of the Class of '94 were self-employed in 1997. Within this group of self-employed graduates, about two-thirds did not have any employees while about one in ten had five or more employees (results not shown).

As expected, the rate of self-employment was high among medicine/dentistry and law graduates (49 and 27 percent, respectively). More surprising are the high rates among fine arts and M.A. graduates (32 and 25 percent, respectively). In some fields of study, such as engineering and business/commerce, two and one half years after graduation may be too soon to measure the potential for self-employment, given that many of these graduates would still be acquiring professional certification.

Occupational and Industrial Location of Employment

To more fully understand the 1997 labour market outcomes of members of the Class of '94, we now will examine their distribution across occupations and industries. Such an analysis is essential for documenting the labour market "pay-offs" of university education. As well, it provides detailed evidence of where there is employer demand (or lack of demand) for the skills and knowledge obtained in particular fields of study.

Occupations in 1997

Again we are primarily interested in the careers of nonstudents, but it is useful to begin our discussion by comparing their occupational attainment to that of their peers who returned to or continued their education after graduating in 1994. We use the *National Occupational Classification (NOC)* for classifying occupations since this system allows us to distinguish occupations on the basis of general skill requirements, from management and professional levels through to unskilled jobs.

While close to three-quarters of the Class of '94 worked in professional or managerial jobs in 1997, we also find that students and nonstudents occupy somewhat distinct labour market positions (Figure A19). Furthermore, it is apparent that, after leaving university, graduates move into better jobs than those occupied by students. Compared with those still in the formal education system, nonstudents are more likely to be in management and in natural/applied science professions. In contrast, students are more likely to find employment in semiskilled and clerical occupations.

The fact that relatively more students than nonstudents were employed in business/finance professions and health professions is due to the high proportion of 1994 graduates who pursued university-based professional training in these fields. Furthermore, the fact that 29 percent of students (compared with 33 percent of nonstudents) worked in social science, government and education-related professions can probably be traced, in part, to university research and teaching assistantships – common among graduate students in many of these fields of study.

Given large gender differences in fields of study, we also find that the occupational distribution of employment is highly gendered. Among nonstudents, female graduates are concentrated in social science, government and education-related professions, a category that includes teaching, social work, law, and other arts-based careers (Figure A20). Indeed, 40 percent of female graduates are in this occupational group, compared with about one-quarter of men. We also note higher proportions of nonstudent females in clerical, semiskilled, and paraprofessional occupations, although the percentages are still low. Nonstudent males are far more likely to be employed in natural/applied science professions and in management.

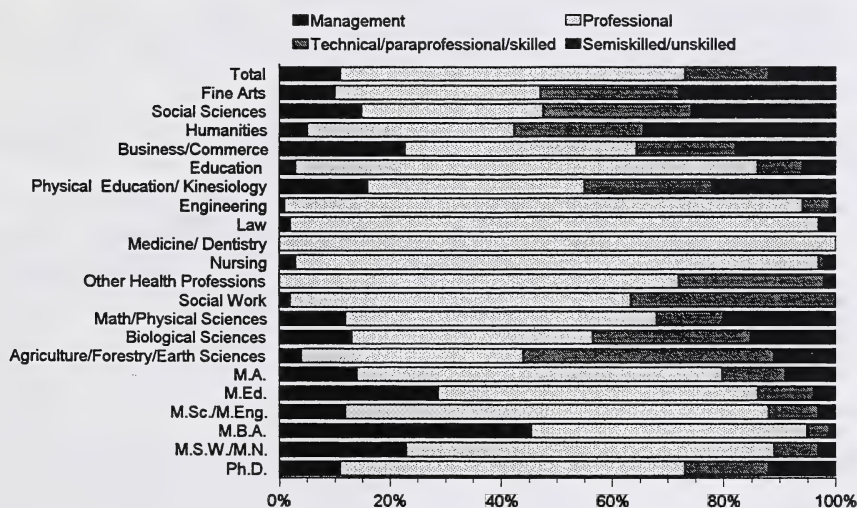
Table 3: Ten Most Common Jobs by Gender, Employed Nonstudents in 1997, 1994 Alberta University Graduates

Females		Males	
Occupational Title*	% of all employed females (n)	Occupational Title*	% of all employed males (n)
1. Elementary school and kindergarten teachers	16.1 (390)	1. Secondary school teachers	8.2 (149)
2. Secondary school teachers	9.2 (223)	2. Elementary school and kindergarten teachers	4.2 (77)
3. Registered nurses	6.3 (154)	3. Computer systems analysts	4.2 (76)
4. College and other vocational instructors	2.3 (55)	4. Financial auditors and accountants	3.4 (62)
5. Lawyers	2.1 (50)	5. Lawyers	2.8 (58)
6. Retail sales person / sales clerks	2.0 (49)	6. Sales, marketing and advertising managers	2.6 (48)
7. Community and social service workers	1.8 (43)	7. Petroleum engineers	2.5 (45)
7. Financial auditors and accountants	1.8 (43)	8. Retail sales person / sales clerks	2.1 (38)
8. Administrative officers	1.6 (40)	9. Computer engineers	2.0 (37)
9. Social workers	1.6 (39)	10. College and other vocational instructors	1.8 (33)
10. Sales, marketing and advertising managers	1.6 (38)		
% of all female employment in the top 5 occupations	36.0	% of all male employment in the top 5 occupations	22.8
% of all female employment in the top 10 occupations	48.2	% of all male employment in the top 10 occupations	33.8

* Based on 4-digit NOC (National Occupational Classification) job titles.

Table 3 offers a more detailed look at the distribution of job titles among female and male nonstudents. The table shows that women are more concentrated than men in a handful of occupations: 48 percent of women versus 34 percent of men were employed in ten specific occupations. Comparing these job titles, it is evident that, for both sexes, teaching is the leading career (this is not surprising, given that education graduates made up 18 percent of the 1997 AGS sample; see Table 2). But after this, traditional gender differences appear. For example, women are more likely to become nurses or social workers while, for men, computer analysts and computer engineers are among the top ten occupations. We also should note that, for both sexes, retail sales appear on the list of top ten occupations. Some of the graduates in these jobs may be at the beginning of a promising career in the retail industry while others may be trapped in sales jobs that are more typically filled by students.

Figure 12: Occupations of employed nonstudents in 1997 by field of study, 1994 Alberta university graduates



The relationship between field of study, on one hand, and labour market destination, on the other, is examined in Figure 12. Combining occupations into four broad groups – management, professional, technical/paraprofessional/skilled, and semiskilled/unskilled – yields further insights. Among nonstudents, between 20 and 45 percent of graduates from M.B.A., M.Ed., business/commerce, and M.S.W./M.N. programs are in management jobs. But also note that graduates from physical education/kinesiology, social science, M.A., biological science, and math/physical science programs are well represented in management positions.

By creating two categories below the professional level – technical/paraprofessional/skilled, and semiskilled/unskilled – we can roughly determine possible mismatches between university education and job requirements. This issue is pursued later in the report so, for now, we simply make the point that graduates from some fields of study are much more likely than others to be working in medium- and low-skilled jobs. This is particularly so for the three arts fields, physical education/kinesiology, the three science fields, and business/commerce.

Industry in 1997

An understanding of the industrial distribution of graduates' employment is also useful, since a particular occupation might not offer the same working conditions and job rewards in all industries. Looking at industry of employment by gender, we find that men are far more likely than are women to work in mining, oil and gas, and in business services (Figure A21). Women are concentrated in the public sector, mainly in education and health/social services. Similar proportions of both sexes – about one in ten – work in retail trade and the other consumer services, industrial sectors with below-average working conditions and rewards.²⁴

Table 4: Ten Most Common Industries by Gender, Employed Nonstudents in 1997, 1994 Alberta University Graduates

Females		Males	
Industry*	% of all employed females (n)	Industry*	% of all employed males (n)
1. Educational services	36.8 (895)	1. Educational services	21.2 (387)
2. Health and social services	23.7 (578)	2. Business services	17.0 (310)
3. Business services	9.6 (233)	3. Crude petroleum and natural gas	11.4 (208)
4. Crude petroleum and natural gas	3.3 (80)	4. Health and social services	10.6 (193)
5. Provincial government	3.2 (79)	5. Communications	4.4 (81)
6. Other retail stores	2.9 (71)	6. Other retail stores	2.7 (49)
7. Banks and trust companies	1.6 (40)	7. Provincial government	2.6 (47)
8. Communications	1.5 (37)	8. Agricultural industries	2.1 (38)
9. Amusement and recreational services	1.4 (35)	9. Banks and trust companies	2.0 (37)
10. Food and beverage service industries	1.1 (28)	10. Amusement and recreational services	1.9 (34)
% of all female employment in the top 5 industries	76.6	% of all male employment in the top 5 industries	64.6
% of all female employment in the top 10 industries	85.1	% of all male employment in the top 10 industries	75.9

* Based on 2-digit Standard Industrial Classification (SIC) industry titles.

²⁴ See Economic Council of Canada (1990) and Krahn (1992).

Table 4 presents a more detailed description of the specific industries in which (nonstudent) women and men were employed in 1997. Just as for occupations, women are more concentrated in the top ten industries than are men. For both sexes, education holds the top spot, again the result of the high proportion of education graduates produced annually by the Alberta education system. While nine specific industries appear on both lists, their ranking differs, mainly because of the higher proportion of women employed in the public sector. The single industry appearing on the top-ten list for females, but not for males, is food and beverage services (part of the larger consumer services category). The one industry on the male list but absent from the female list is agriculture.

Figure 13: Industrial sector* of employed nonstudents in 1997 by field of study, 1994 Alberta university graduates

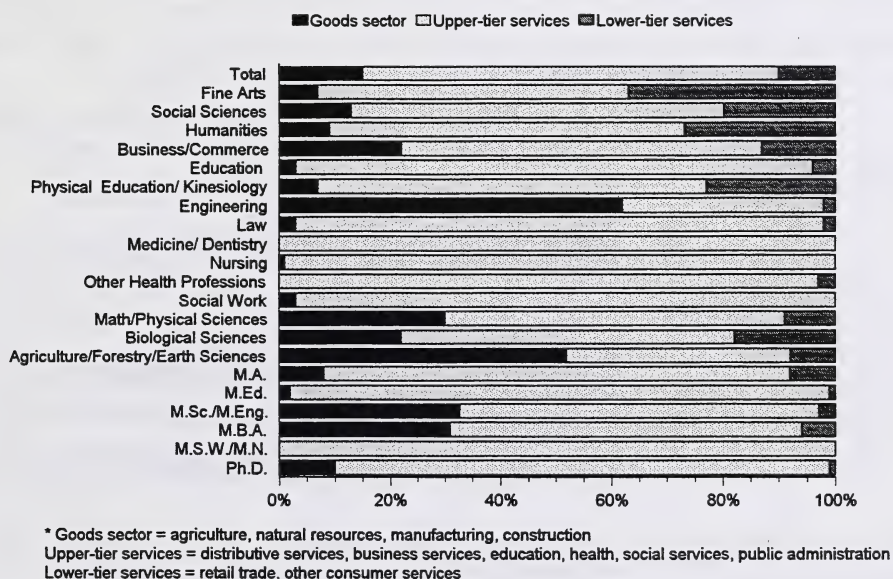


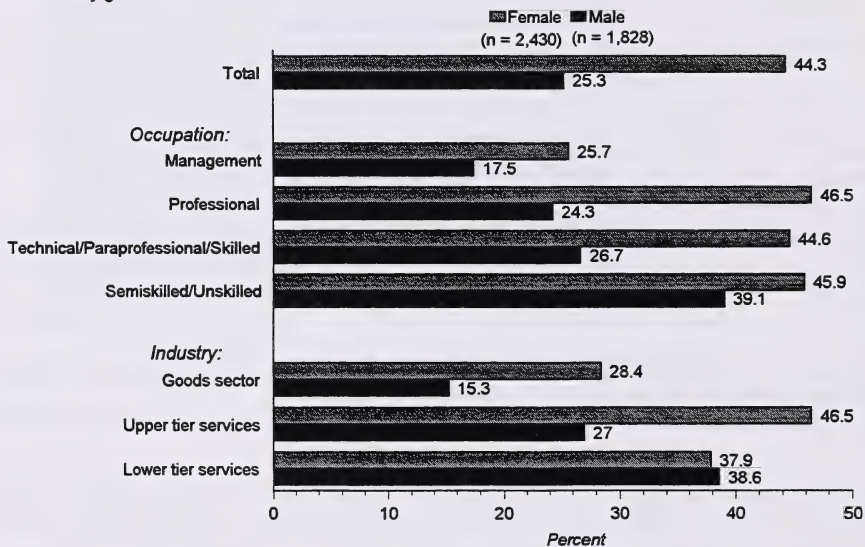
Figure 13 combines the 14 industries in Figure A21 into 3 general categories, distinguishing goods-producing industries from upper-tier and lower-tier services (the latter contain retail sales and other consumer services). The distinction between upper- and lower-tier services highlights some of the polarized working conditions in the service sector, which now accounts for 75 percent of all jobs in Canada.²⁵ Most (nonstudent) graduates were employed in 1997 in the upper-tier service industries, sectors that generally can be seen as the core of the “knowledge” economy. So what becomes interesting, then, is which fields of study tend to lead into the other two sectors. The majority of engineering and agriculture/forestry/earth science graduates worked in the goods producing sector, as did roughly one-third of graduates in math/physical sciences,

²⁵ See Krahn (1992) and Krahn and Lowe (1993: 68-70) for further discussion of these industrial distinctions.

M.Sc./M.Eng., and M.B.A. programs. Looking at the lower-tier services, we find between one-quarter and one-third of fine arts and humanities graduates in this sector, along with approximately one in five graduates from physical education/kinesiology, social sciences, and biological sciences.

Occupations and industries converge to create labour market segments that offer a range of quite different working conditions and rewards. We are attempting to demonstrate that it is the labour market location of a graduate that determines her or his chances of employment success, and that this success is largely determined by employers' hiring practices and job requirements in different labour market sectors. Thus upper-tier services provide good opportunities for professional careers. The goods producing sector, although providing far fewer jobs for graduates overall, offers relatively more management and technical/paraprofessional/skilled opportunities. In contrast, the lower-tier services, which employed only about ten percent of nonstudents in 1997, actually provided relatively more management positions (broadly defined) than did the other two sectors, but this did not compensate for the lack of professional employment.²⁶

Figure 14: Nonstandard work* among employed nonstudents in 1997 by occupation and industry by gender, 1994 Alberta university graduates



* Nonstandard work includes one or more of part-time work, temporary work, and multiple job holding. People in more than one type are counted only once.

²⁶ In the lower tier services, management positions may be more easily obtained (e.g., becoming a shift manager in a fast food restaurant or a sales manager in a retail shop). In contrast, management positions (with greater responsibility) in the goods producing sector and the upper tier services may be awarded to employees only after they have worked their way up through a number of other positions.

We can gain another useful perspective on the employment outcomes of university education by examining the extent of nonstandard work across occupations and industries (Figure 14). Among nonstudents employed in 1997, nonstandard work was least prevalent in management occupations and in the goods producing sector. Considering that both areas employ more male than female university, we can see why there are proportionally fewer men in nonstandard jobs. Among women, nonstandard work is as common in professional occupations (e.g., teaching, nursing) as in technical/paraprofessional/skilled occupations. With respect to industry differences, the upper-tier services have the highest proportion of women in nonstandard jobs – the teachers, nurses, and social workers discussed above, for example. Finally, we can see that gender differences in nonstandard work are the smallest in semiskilled/unskilled jobs, and in lower tier services. In these less rewarding occupations and sectors, women and men share equally the high odds of working in part-time or temporary positions.

Pay and Benefits

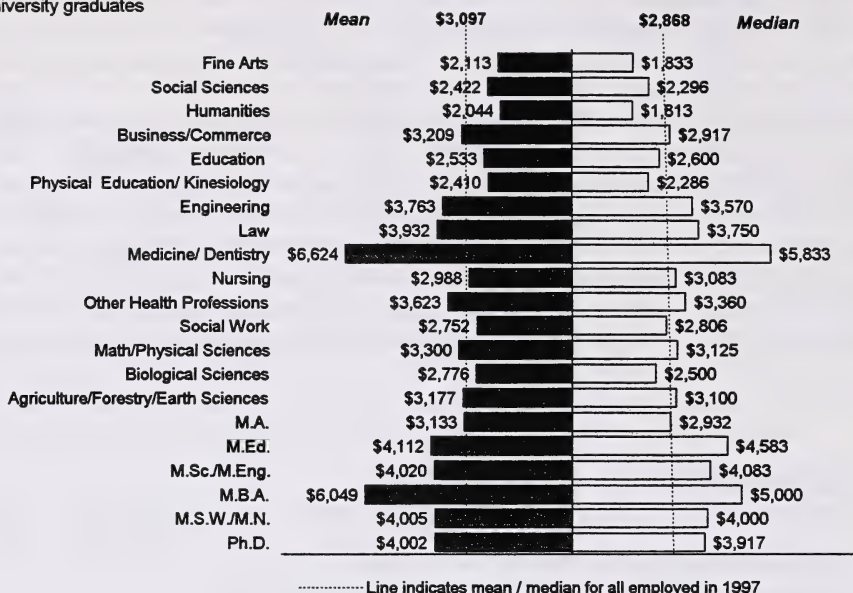
Field of Study Variations in Earnings

In 1997, employed nonstudents from the Class of '94 reported an average monthly earned income of \$3,097, before deductions and including all jobs if the respondent had more than one (Figure 15). This translates into an average annual income of \$37,164, substantially higher than the annual average earnings of all employed Albertans of approximately \$30,758.²⁷ However, very high incomes reported by a very small number of graduates skew this average upward, so it is more appropriate to look at the median income (the mid-point in the income distribution) which, at \$2,868, is somewhat lower than the mean.

Figure 15 displays variations in income by field of study for nonstudents, and presents both medians and means. Looking at the median income, the highest earnings are reported by graduates from medicine/dentistry. AGS respondents with graduate degrees (with the exception of those with an M.A.), and graduates of law and engineering programs also earned well above the median. Graduates with below-average 1997 earnings tended to come from fine arts, humanities, social sciences, physical education/kinesiology, and biological sciences programs. These overall earnings patterns are consistent with our earlier discussion of the kinds of occupations and industries in which graduates from different fields of study were employed in 1997.

²⁷ We arrived at this annual estimate by using Statistics Canada's (1997: Table 41) January 1997 estimate of average weekly earnings for Alberta (\$591.50).

Figure 15: Mean and median monthly income* of employed nonstudents in 1997 by field of study, 1994 Alberta university graduates



* Gross (before deductions) monthly income standardized from data reported in different pay periods (e.g., hourly, weekly, annually), including main job and other jobs if respondent had more than one.

The Female - Male Wage Gap

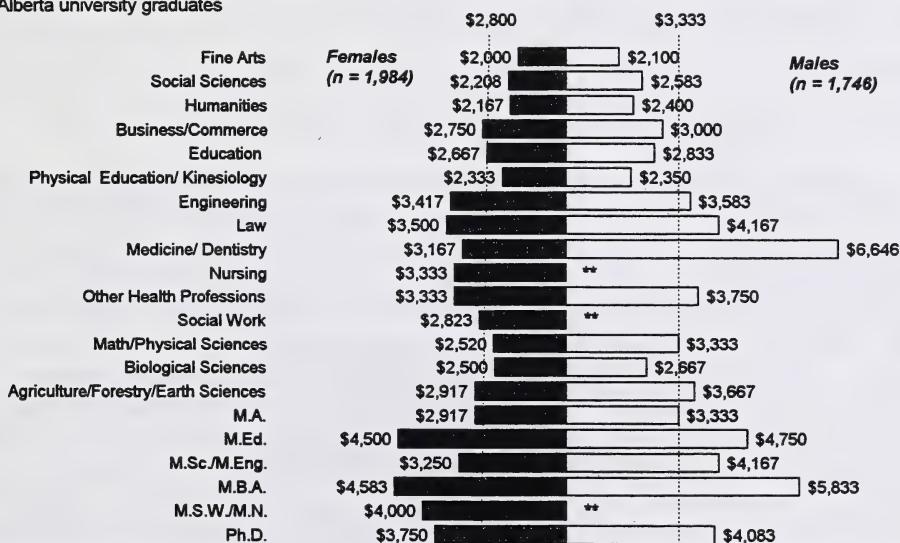
Figure 16 presents median earnings by field of study for full-time employed (nonstudent) AGS respondents in 1997. Using these data, we calculated female - male earnings ratios. For all fields of study combined, this ratio is 84 percent (Figure A23). In other words, for every dollar a male graduate working full-time in 1997 earned, his female counterpart working full-time earned 84 cents. The wage gap in most fields of study is considerably narrower than 84 percent (Figure A23). For nine of the 18 fields of study for which the earnings ratio could be reliably estimated, women earned 90 percent or more of what men earned. The female - male earnings ratio is below the average for only five fields of study, with the largest gap found in medicine/dentistry, where females earned only 48 percent of the median male wage. An explanation for this very low earnings ratio is not immediately apparent.

To place these findings into context, in the total Canadian labour market the female-male earnings ratio (for full-time, full-year workers, based on mean earnings) has been rising steadily for several decades, from 58 percent in 1967 to 73 percent in 1995.²⁸ The 1997 AGS findings suggest that the gender wage gap is smaller among university-educated workers, as do other national surveys of university graduates. For example, the *National*

²⁸ See Statistics Canada (1997a: 18).

Graduate Survey found female - male earnings ratios ranging between 83 and 91 percent in the 1980s. The 1992 NGS (a two-year follow-up of 1990 graduates) recorded earnings ratios (based on median earnings) of 92, 86, and 89 percent at the bachelors, masters and doctoral degree levels, respectively.²⁹ Thus, while university education leads to a smaller gender wage gap, compared to what we observe in the labour force as a whole, there is still evidence of women earning less than men with similar amounts of education. Gender variations in specific fields of study and a systematic undervaluing of work traditionally performed by women are the main underlying factors. The individual characteristics of female and male graduates have little bearing on market earnings.³⁰

Figure 16: Median monthly income* of nonstudents employed full-time in 1997 by field of study and gender, 1994 Alberta university graduates



..... Line indicates median for all employed females or males in 1997
 *Gross (before deductions) median monthly income standardized from data reported in different pay periods (e.g., hourly, weekly, annually), including main job and other jobs if total weekly work hours is 30 or more.
 ** Too few cases (15 or less) for reliable estimates.

Occupation and Industry Variations in Earnings

Looking at female and male median earnings by occupation for full-time employed nonstudents, we find the highest earnings (both sexes combined) in health care and natural/applied science occupations (Table A3). However, the largest number of graduates work in social science, government, and education professions (most of these individuals would be teachers), professional positions that provide average earnings for

²⁹ See Wannell and Caron (1994), Little and Lapierre (1996).

³⁰ See Wannell (1990), Hughes and Lowe (1993), and Davies et al. (1996) for further discussion of the gender wage gap among university-educated workers.

females but somewhat below average earnings for males. The best-paid female graduates are found in technical/skilled health jobs. The 40 graduates in this occupational category would include graduates of rehabilitation medicine, dental hygiene, and medical lab science programs. Among males, those in health professions (mainly doctors and dentists) and managers are the highest earners, followed by professionals in the natural and applied sciences (a category that would include engineers).

There are large gaps in female - male earnings in health professions (74 percent) and management (77 percent), the two highest paying occupational categories overall (Table A3). Two smaller occupational groups – semi-skilled sales and service jobs, and technical jobs in natural and applied sciences – also have large earnings gaps. We should point out that the second largest occupation in terms of numbers employed in 1997 comprises natural and applied science professions. It is well paying, and has a smaller than average wage gap, yet only 21 percent of the AGS respondents working in these jobs are female. Management is the third largest occupation overall and also is well paying. Here the pattern is different, with female AGS respondents making up 45 percent of managerial workers, yet earning just over three-quarters of what their male counterparts earn.

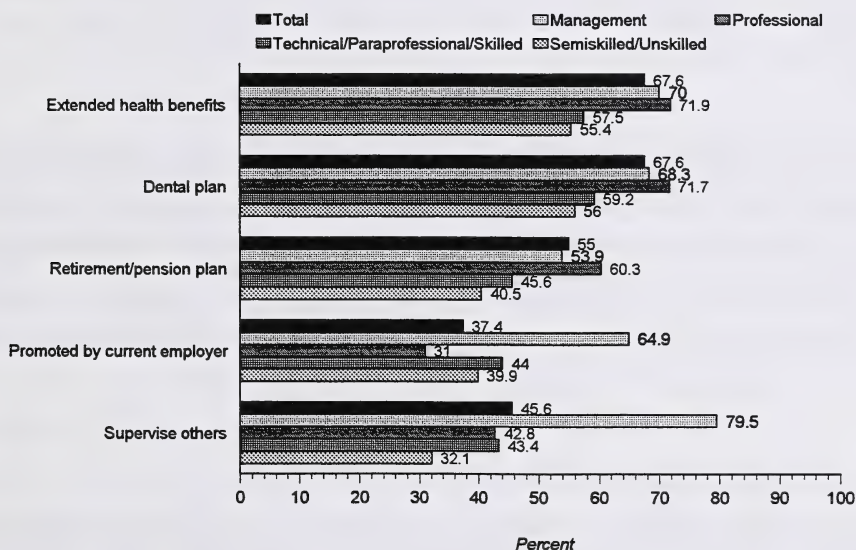
In terms of industry variations, the energy sector (mining, oil and gas) pays the highest salaries (Table A4). This is true for both sexes, although the wage ratio is similar to the all-industry average (84 percent). However, relatively few female university graduates found employment in this sector, accounting for only 27 percent of its workers. The next highest paying industry is communications, but here the wage premium goes mainly to males. Again, this is an industry where male university graduates are most likely to find jobs. The two industries employing the largest numbers of university graduates are education and business services. Earnings in education are at the all-industry average for females, but below this average for males. The female - male earnings ratio is relatively high (92 percent) in this industry, where two-thirds of the university-educated workers are females. In business services, females earn just above the all-industry average while males' earnings are average. Female respondents comprise 41 percent of the AGS sample members employed in this industry and the wage gap is wider than in the education sector.

Summing up, it is apparent that incomes vary considerably across occupations and industries, labour market destinations that are in large part a function of earlier choices regarding field of study. Furthermore, within two and one-half years of graduation there are pronounced gender differences in earnings within some occupations and industries. The more detailed analyses required to sort out the inter-related determinants of these gender differences is beyond the scope of this report, but this section does at least identifying a number of questions that further research could usefully address. Why do female and male graduates employed in the same occupations or industries receive different pay? Would a more finely grained analysis of these occupations and industries find gender stratification, where women (regardless of credentials) are recruited into lower-level jobs? Alternatively, why has the earnings gap in some industries and occupations all but disappeared?

Job Benefits

We cannot assess job rewards on the basis of pay alone, so in this section we broaden our discussion to examine benefits, promotions, and supervisory responsibilities. Figure 17 shows that the majority of employed nonstudents (both full-time and part-time) received health, dental and pension benefits in 1997. Thus university graduates at an early stage in their careers are more likely than the typical Canadian worker to receive such benefits.³¹ There are consistent differences across major occupational groups, with a higher proportion of graduates in management and professional jobs receiving these benefits. Gender differences (not shown) are minor, however, with males being slightly more likely to receive health and dental benefits, and females being somewhat more likely to receive pensions. The latter finding probably reflects the higher proportion of women employed in the public sector, where pensions are a standard feature of the employment package.

Figure 17: Benefits, promotions, and supervisory responsibility, employed nonstudents in 1997 by occupation, 1994 Alberta university graduates



Promotions and supervisory duties are also important features of a job, reflecting a worker's career opportunities and level of responsibility in an organization. Overall, 37

³¹ See Akyeampong (1997) who reports that, in 1995, 51 percent of paid employees in Canada received employer-sponsored pensions, 59 percent received health benefits, and 55 percent received dental benefits.

percent of nonstudents who were employed in 1997 had received one or more promotions with their current employer. Male AGS respondents were more likely to have received a promotion than were female graduates (44 percent and 33 percent, respectively). Professionals were least likely to have been promoted, which is consistent with how many professional careers are organized.

It is noteworthy that close to half of the employed nonstudents in the 1997 AGS sample reported supervising others in their 1997 job. As one would expect, this figure was much higher (80 percent) for graduates in managerial occupations. Again, males are more likely to have supervisory responsibilities than are women (54 versus 40 percent), in large part because of their different occupational settings.

Job Requirements

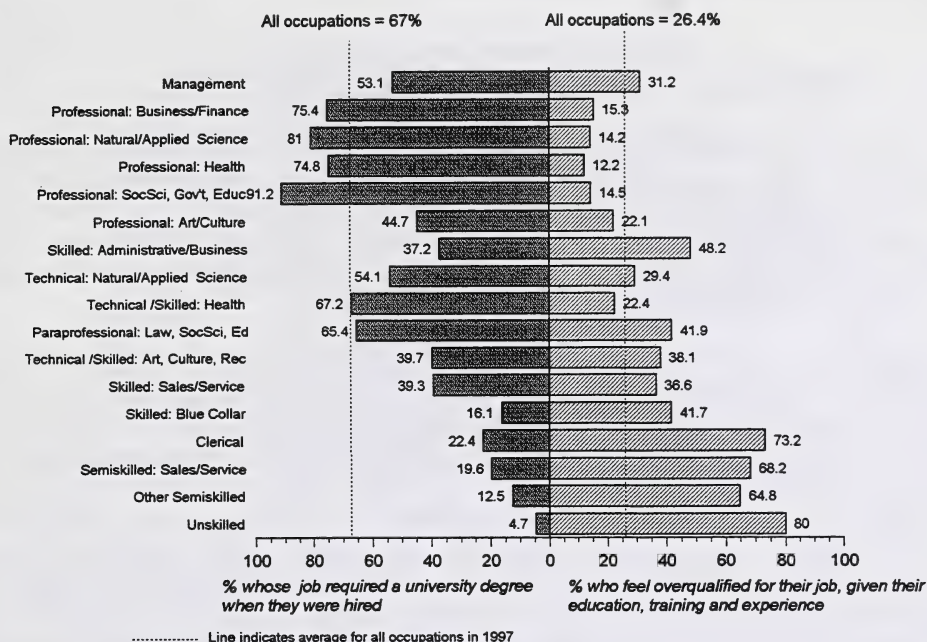
By documenting graduates' work arrangements, occupations and industries, income and benefits, we have set the stage for investigating more subjective aspects of their employment. How successful are graduates in finding challenging and interesting jobs that engage their intellects? In this section, we take up this general question, examining the fit between graduates' education and the requirements of jobs held by nonstudents in 1997.

Essentially, we are interested in human capital utilization, or the fit between university graduates' education, on one hand, and the skills, abilities and knowledge required in their jobs, on the other. In other words, is the Alberta (and Canadian) economy able to fully use the talents of these well-educated young workers? And do employers organize work in ways that allow these graduates to contribute to their full potential? These are crucial questions, especially in light of today's public policy emphasis on creating a knowledge-based economy that presumably relies more upon skilled workers than in the past.

Educational Requirements of Current Jobs

The 1997 AGS asked two questions that measured the educational requirements of graduates' current jobs. Respondents were asked if a university degree was required when they were selected for their current job. Approximately two-thirds of nonstudents answered yes, with some interesting variations by occupation (Figure 18). For example, just over half of managers stated that a degree was required. In the professions, with the exception of those in the arts and culture field, a degree was typically required. But as we might expect, most technical, skilled, semi-skilled or unskilled jobs did not require a degree.

Figure 18: Educational requirements and perceived overqualification in current job, nonstudents employed in 1997 by occupation, 1994 Alberta university graduates



Respondents also were asked if they felt overqualified for their current job, given their education, training and experience. Figure 18 reveals that 26 percent of all nonstudents employed in 1997 felt overqualified. Note how variations in the level of perceived overqualification parallel responses to the question about degree requirements in the job. Thus, 31 percent of university graduates in management positions felt overqualified for their job and only 53 percent reported that a degree was required. In contrast, professions that typically require degrees exhibit the lowest rates of self-assessed overqualification (see Table A5 for differences by field of study). And the small number of graduates in clerical, sales, service and other semiskilled or unskilled jobs, where degrees are rarely required by employers, generally felt overqualified for their positions.

At the undergraduate level, 64 percent of nonstudents were in jobs in 1997 that required a degree (Figure A24). This figure varies little by gender or work arrangements, with the exception of males in nonstandard jobs. In terms of perceived overqualification, the overall level among graduates of undergraduate programs is 27 percent. This percentage is considerably higher, however, among graduates in nonstandard jobs.

Among (nonstudent) AGS respondents with graduate degrees, a much higher proportion (82 percent) reported being in a job that required a university degree (Figure A24). Gender and work arrangements again had little impact on this figure, except for males in nonstandard jobs. Perceived overqualification was somewhat lower among recipients of graduate degrees (24 percent overall) compared to AGS respondents who had received

undergraduate degrees in 1994 (27 percent). Again, self-assessed overqualification was higher among respondents in nonstandard jobs.

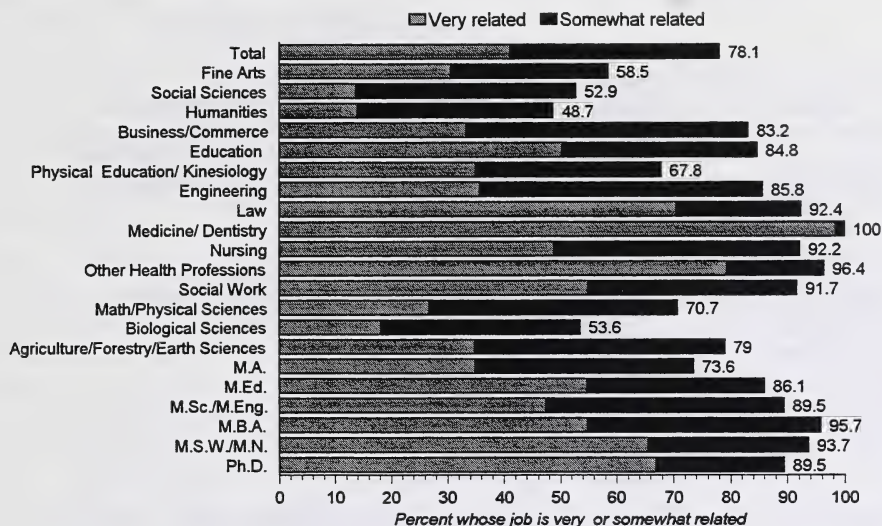
Fit Between University Programs and Jobs

A university education has many benefits for individuals, for society, and for the economy. Individuals' motivations to pursue a university degree are also wide ranging. They may include a basic love of learning, personal development, or the desire to enter a specific career. Despite the diversity of motivations for enrolling in university, and the equally diverse benefits of obtaining a degree, much of the current focus on the value of university education is job-related.

That said, the 1997 AGS leaves aside other benefits of a university education in order to highlight the links with subsequent employment. Respondents were asked how important it was for them to acquire the skills needed for a particular job when deciding to enroll in their program. For 85 percent of nonstudents employed in 1997, acquiring particular job skills was an "important" or "very important" motivation (Figure A25). Other possible reasons for choosing a program were not explored, even though post-secondary decisions are shaped by many factors. Nonetheless, we note that most professional program graduates made their program choice in order to acquire specific job skills. In contrast, somewhat lower proportions (between 61 and 75 percent) of humanities, social sciences, fine arts, M.A. and Ph.D. graduates stated that acquiring specific job skills had been an "important" or "very important" consideration. Thus while a large majority of graduates reported, at least in retrospect, that they selected their program for career-related reasons, we still find variations by field of study.

The 1997 AGS also asked employed respondents about the extent to which their 1997 job was related to the program from which they graduated. In terms of the overall fit between graduates' jobs and their field of study, close to eight out of ten indicated a close or reasonably close ("very related" or "somewhat related") fit (Figure 19). As expected, the professional faculties of medicine/dentistry, other health professions, law, and education have the highest proportions of (nonstudent) graduates assessing their current jobs as "very related" (the gray shading in Figure 19) to their program.

Figure 19: Overall fit between current job and university program*, nonstudents employed in 1997 by field of study, 1994 Alberta university graduates

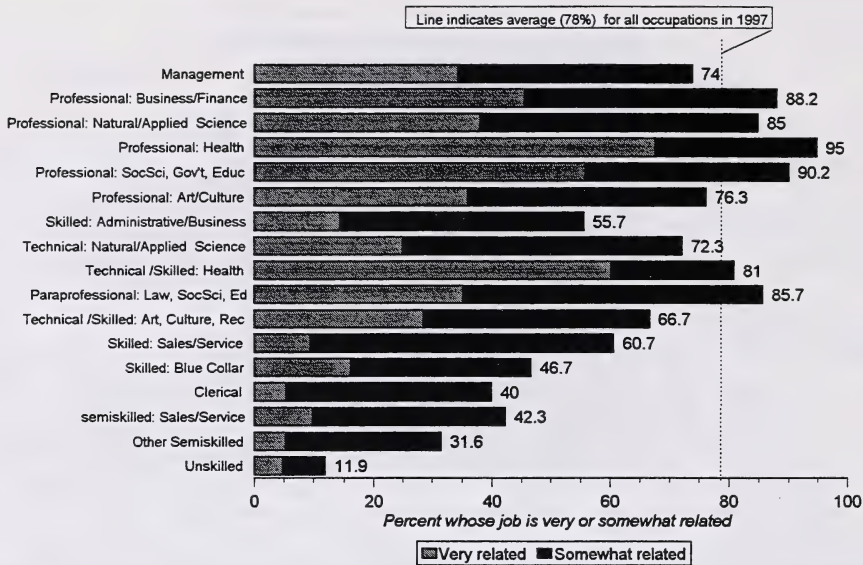


* Based on responses to the question: "Overall, how related is your current (main) job to the program from which you graduated in 1994 (very related, somewhat related, not very related, or not at all related)?"

But also note the much lower proportions of graduates from the humanities, social sciences, fine arts, and biological sciences who were in jobs seen to be "very" or "somewhat related" to their programs of study. Even though we recognize that a larger minority of graduates from these programs had *not* chosen their field of study for career-related reasons (see Figure A25), this finding calls for further investigation. On one hand, we have documented earlier that graduates from these fields were more likely to earn below-average incomes and to be in nonstandard jobs, and less likely to be in managerial or professional positions, findings that parallel these lower assessments of the fit between their university education and their current job. Yet, on the other hand, there is evidence from other sources that these general arts or science programs help prepare individuals for a wide range of rewarding careers.³² Hence, further research examining the longer-term career outcomes of general arts and science graduates would be useful. It may be that employers are less likely to recognize the value of the skills and knowledge acquired by general arts and science graduates, choosing instead to hire individuals with more clearly defined and occupationally targeted skill sets. Consequently, it may take longer for general arts and science graduates to find jobs where they can use their knowledge and skills.

³² See Allen (1996).

Figure 20: Overall fit between current job and university program*, nonstudents employed in 1997 by occupation, 1994 Alberta university graduates



* Based on responses to the question: "Overall, how related is your current (main) job to the program from which you graduated in 1994 (very related, somewhat related, not very related, or not at all related)?"

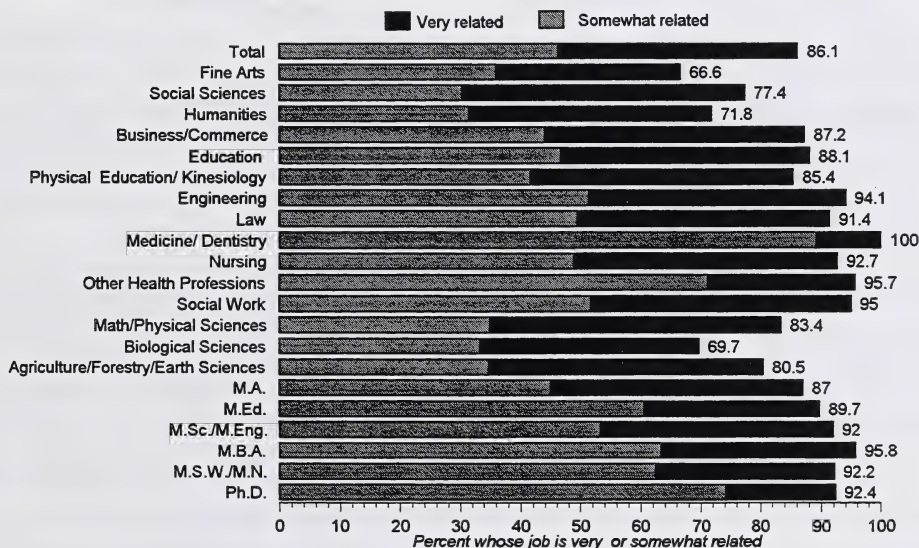
Another way of looking at education - job fit is from the perspective of occupational requirements. Figure 20 presents the responses to the overall fit question by occupational group. It is useful to think back to earlier discussions about occupational pay and educational requirements. Generally, occupations with higher pay tended to require a university degree. The exception is management, which despite paying very well, had below average educational requirements and above average self-assessed overqualification (see Figure 18). Similarly, while 74 percent of graduates in management occupations reported that their jobs were "very" or "somewhat related" to their university program, this is still a lower proportion than was observed in any of the professions (Figure 20). The uniformly tight fit in four of the professions (business/finance, natural/applied science, health, social sciences/government/education) is interesting in light of wide income differences across these occupational groups (see Table A3). Similarly, the above average fit reported by graduates in technical/skilled health occupations and in paraprofessional jobs in law, social sciences, and education should be contrasted with the differences between these two occupational groups in terms of income and perceived overqualification.

The key point, then, is that a single measure – be it income, educational requirements, overqualification, or program-job fit – cannot possibly account for the complex and sometimes contradictory relationships between the acquisition of university credentials and labour market outcomes. The 1997 AGS made a small step in the direction of more refined measures, asking respondents two variants of the "overall fit" question. One

focused on the *subject-area* (discipline-based) *knowledge* they had acquired, while the other asked about *general skills and abilities* (such as communication skills, critical thinking, problem solving) acquired.

Figure 21 shows uniformly higher proportions of graduates in each field of study who reported using their general skills and abilities in their current job, compared with their subject-area knowledge (Figure A26). While 75 percent of the employed nonstudents claimed that their 1997 job was “very” or “somewhat related” to the subject-area knowledge they had acquired at university, 86 percent considered their general skills and abilities to be “very” or “somewhat related.” While responses to all three fit questions display much the same pattern across fields of study, it is apparent that the general skills and abilities acquired in a university education seem to have wider applicability in the labour market. Between 67 and 77 percent of graduates in the three arts fields and in biological sciences – who, we recall, reported a low overall fit between their degree programs and their job requirements – were in jobs that took advantage of the general skills and abilities acquired in their program (i.e., they answered “very” or “somewhat related” to this question).

Figure 21: Relatedness of current job to general skills and abilities acquired in university program*, nonstudents employed in 1997 by field of study, 1994 Alberta university graduates



* Based on responses to the question: "In terms of the general skills and abilities you acquired (e.g., communication skills, critical thinking, problem solving), how related is your current (main) job to the program from which you graduated in 1994 (very related, somewhat related, not very related, or not at all related)?"

Use of Skills, Knowledge and Ability on the Job

Our analysis of graduates' responses to questions about the relevance, or fit, of their program of study to their current job raises many critical questions. What does a loose fit

really mean? Does it reflect inadequacies in a particular university program, even if that program was not designed to produce graduates for a particular occupational niche and if students choosing such a program did not necessarily do so for career-related reasons? Or might it also be a function, in part, of the demand side of the labour market equation, reflecting the preference of employers for graduates who have acquired occupationally-specific rather than more general skills and abilities? While the management literature advocates the need for creative thinking, problem-solving, teamwork, and related “soft” skills in a rapidly-changing, knowledge-based society, to what extent are such general and transferable skills really used by university graduates in their jobs?

These are vital human resource development issues that clearly require further research. While the 1997 AGS cannot evaluate employers’ hiring practices, it did include a set of questions about the use of general (as opposed to occupationally specific) skills in respondents’ current jobs. Recognizing the subjective nature of self-reports of skill use (there is, no doubt, some individual variation in how such questions are answered), it is still interesting to observe the substantial variation in response patterns by nonstudents to these nine questions (Figure 22). Note that, given the five response options for these questions (skills used “not at all” up to “a great extent”), we are presenting only the proportion of AGS respondents who stated that they used a particular skill/ability “to a great extent” (a score of 5 on the five-point scale).

From the perspective of these university graduates, the most widely used skills/abilities were the abilities to work independently and with others (team work) – 66 percent of nonstudent AGS respondents indicated that, in their jobs, they used these skills “to a great extent.” Next in line were speaking and problem solving skills, used to a great extent by almost 60 percent of these employed university graduates. About one in two answered in this positive manner with respect to ethical awareness (48 percent). Less than half (43 percent) indicated that, to a great extent, their job required creative thinking.

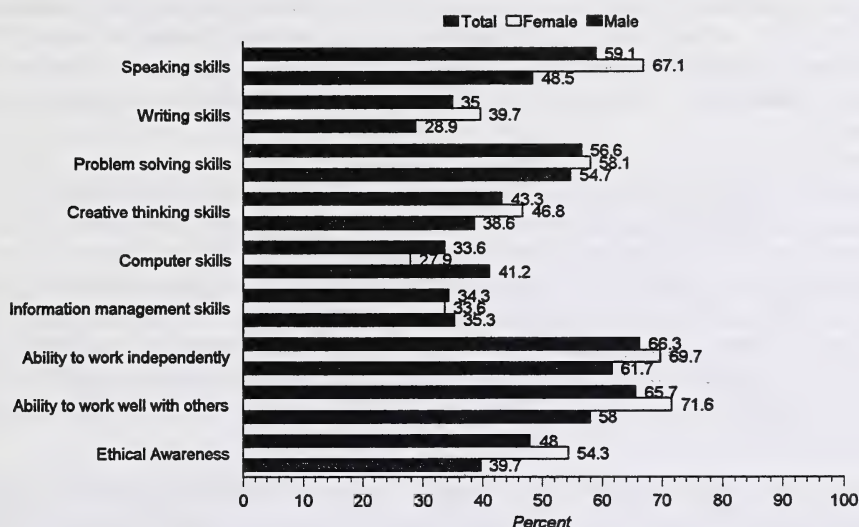
Writing skills, computer literacy, and information management are skills that could be seen as essential in an information-based society. Yet only about one-third of nonstudents used these skills to a great extent in their jobs in 1997. It is somewhat ironic that, while concerns about the literacy levels of Canadian workers are widespread, we observe only one in three recent university graduates reporting that they use their writing skills to a great extent in their job.³³ Similarly, while universities are scrambling to better equip students with computer skills (and computers), only a minority of university graduates find jobs in the immediate post-graduation period that use such skills extensively.

While further research about skill utilization in Canadian workplaces is clearly needed, it is apparent that there is more to the university education - job fit issue than simply not enough graduates with specific occupational skills. These AGS results indicate that a large proportion of recent university graduates find themselves in jobs that do not take full advantage of their more general, but equally important, skills and abilities. In short, both demand (jobs available) and supply (skills acquired) issues need to be examined

³³ See Bloom et al. (1997) on the economic benefits of improving literacy skills in the workplace; Krahn and Lowe (1997) and Krahn (1997) discuss the under-utilization of literacy skills in Canadian workplaces.

when addressing the question about fit between university programs and the labour market.

Figure 22: Extensive use of skills, knowledge, and abilities* in current job, nonstudents in 1997, 1994 Alberta university graduates



* Based on responses to the question: "Now we would like to assess to what extent you actually use the following skills, knowledge and abilities in your current (main) job. Using a scale of 1 to 5, where 1 is 'not at all' and 5 is 'to a great extent', to what extent do you use each of the following?" This graph reports responses of 5 (to a great extent).

There are several notable gender differences found in Figure 22. Compared to their male counterparts, female university graduates were more likely to be in jobs in 1997 that required extensive use of speaking skills, team work, independent work skills, creative thinking, ethical awareness, and writing skills. In only one area – computer skills – did men's jobs make more extensive use of skills. This difference is probably a function of the higher proportion of male graduates in engineering and natural science professional positions (see Figure A20).

It is also useful to contrast occupational differences in "extensive use" of the nine general skills and abilities among nonstudent AGS respondents (Figure A27). We can discern a general pattern whereby substantially more graduates in professional positions, compared with all other occupations, reported extensive use of six of these nine skills/abilities. For the remaining three – team work, information management skills, and computer skills – university graduates in management occupations were slightly more likely to report extensive use compared to those in professional positions. In sharp contrast, graduates in technical, paraprofessional, and skilled jobs, and particularly those in semiskilled or unskilled jobs, were much less likely to report extensive use of all nine general skills and abilities.

We also did the same type of analysis for standard and nonstandard work arrangements (Figure A28). Interestingly, with the exception of on-the-job use of computer skills, differences by work arrangements are minor. In fact, from the perspective of university graduates in them, nonstandard jobs require somewhat more extensive use of speaking, creative thinking, and independent work skills than do standard jobs. Despite these similarities in skill requirements, it is clear from our earlier analyses that nonstandard jobs do not pay as well, offer fewer benefits, and by definition, are less secure. Thus, while frequently being asked to do the same type of work as individuals in standard jobs, university graduates in nonstandard jobs are less likely to receive the same level of compensation.

In summary, this discussion of university graduates' skill requirements on the job highlights a number of important issues that, in turn, underscore the problems of human resource utilization in a highly differentiated labour market. It is clearly essential to look beyond the extrinsic rewards of a job, such as pay, benefits and promotions, in order to determine if the job really is skilled and knowledge-intensive. This observation also has relevance to debates about the skills acquired in different university programs, since some focus on general skills and abilities while others assist students in acquiring much more occupationally specific skills. Both are essential in a knowledge intensive, rapidly changing economy.

In one sense, the fact that between one-third and two-thirds of nonstudent university graduates were in jobs that made extensive use of these nine general skills and abilities (sizable proportions also reported "moderate" use) is a positive assessment of the labour market's utilization of highly qualified workers. At the same time, evidence that a majority of university graduates do not make extensive use of three core skill sets – writing skills, computer literacy, and information management skills – should encourage employers to seek ways of better utilizing this potential. Finally, observing greater self-reported skill use among female graduates, we cannot help but juxtapose this finding with the gender earnings gap, which favours men. If relatively more female university graduates are employed in more skill and knowledge-intensive jobs, then why is this not reflected in their extrinsic job rewards?

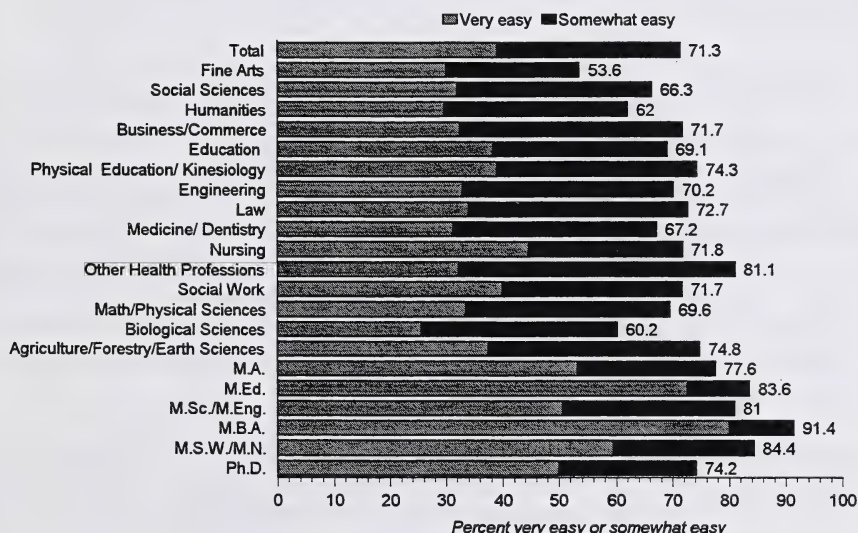
Quality of Working Life

At several earlier points in this report we have argued for a more comprehensive perspective on the overall quality of university graduates' employment and career paths. This final section complements earlier discussions of extrinsic job rewards, educational requirements, and skill use with a subjective assessment by graduates of the quality of their jobs and of their transition into the labour market.

Transition into the Labour Market

Respondents were asked to evaluate their adjustment from university to the workforce by responding to a question about how easy or difficult this transition had been. Figure 23 shows the proportion of employed nonstudents in 1997 who reported a “very easy” or “somewhat easy” transition. Overall, 71 percent stated that their adjustment had been “very” or “somewhat easy” – a positive finding in itself. Looking at field of study differences, we observe that the transition was smoothest from graduate-level professional programs in which students tend to be older and more established in their careers (e.g., M.B.A., M.S.W./M.N. and M.Ed. programs). Fine arts, biological sciences, and humanities graduates were least likely to report an easy adjustment. Even so, the majority did not report difficulties. Recall that graduates from these three fields of study were more likely to report below-average employment rewards, so it is not unexpected that they also would be more likely to assess their transition into the workforce as difficult. We might expect that after several more years in the labour market, graduates of these programs may have overcome these difficulties, but for now this remains a research question that needs to be answered.

Figure 23: Adjustment to the workforce*, employed nonstudents in 1997 by field of study, 1994 Alberta university graduates



* Based on responses to the question: "Since graduating in 1994, how would you rate your adjustment from university to the workforce (very difficult, somewhat difficult, somewhat easy, very easy)?"

Male graduates were more likely to report an easy transition, probably because somewhat larger proportions of men graduated from graduate-level professional programs (Figure A29). Graduates who are 30 or older, married, and with dependent children (three overlapping demographic characteristics) are also more likely to report an easy transition, perhaps because such individuals were more likely to be returning to previous careers. Contrary to what we might predict, graduating from a co-op program makes little difference with respect to self-reported adjustment to the labour market, and having worked in the last year of one's program provides only a minor advantage. In fact, Figure A29 suggests that perhaps the most influential factor in the transition process is the kind of occupation a graduate obtains. Graduates employed in management jobs, followed by those in professions, are more likely than their peers in other jobs to report an easy adjustment to working life. No doubt, those in less rewarding jobs were more likely to feel that they had not yet made a successful transition into the labour market.

Job Satisfaction

Most (nonstudent) university graduates were satisfied with the job they had obtained several years after graduating. From Figure 24, we can see that 71 percent reported themselves being either "satisfied" or "very satisfied." This level of satisfaction was only slightly higher among males. Compared with the Canadian labour force as a whole, where surveys typically find job satisfaction in the 80 to 90 percent range, this is somewhat lower, but job satisfaction research also consistently finds that young workers tend to be less satisfied.³⁴

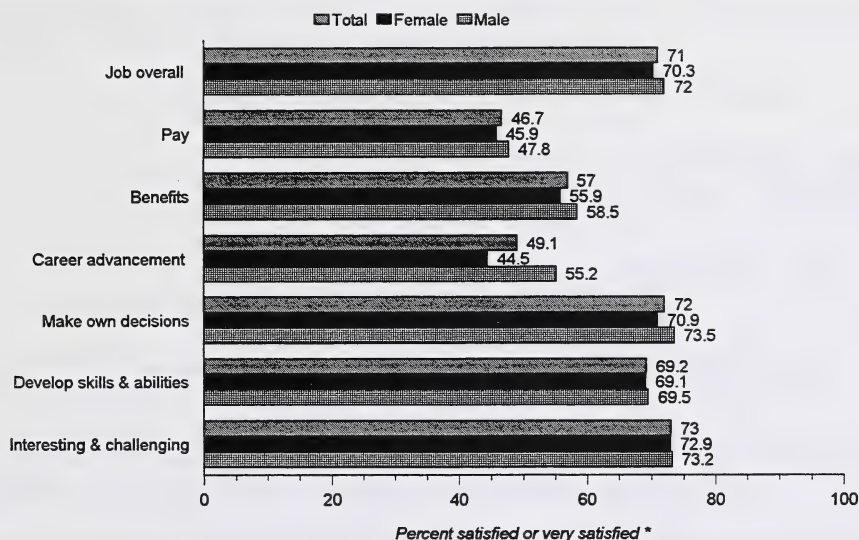
We also examined variations in overall job satisfaction by type of job, occupation, and industry of employment in 1997 (Figure A30). An interesting finding is that self-employed graduates are more satisfied than are employees. This may largely reflect the fact that most of the self-employed are professionals (e.g., doctors, dentists, and lawyers) who are more likely to be in both materially and subjectively rewarding jobs. Graduates in nonstandard jobs are considerably less satisfied than those who are in standard jobs. Less than half of the 1997 university graduates employed in semiskilled or unskilled occupations, or in lower tier service industries (often the same individuals), were satisfied or very satisfied. Thus, as observed in previous studies of job satisfaction, these 1997 AGS results reveal powerful occupation and industry effects on job content and rewards, which in turn affect overall job satisfaction.

Returning to Figure 24, we can also examine university graduates' satisfaction with six specific job characteristics. Just under half were "satisfied" or "very satisfied" with their career advancement opportunities or pay in 1997. Despite the gender wage gap, women and men had similar levels of satisfaction. This suggests that there may be gender differences in career reward expectations among graduates. However, women's much lower rate of promotion (discussed earlier), compared with men, is seen in their greater dissatisfaction with this aspect of their job. Despite doing relatively well by national

³⁴ See Krahn and Lowe (1993: 340-56) for a detailed discussion of the distribution and correlates of job satisfaction.

labour force standards, graduates of both sexes were only moderately satisfied with their benefits.

Figure 24: Overall satisfaction with 1997 job and satisfaction with specific job rewards*, nonstudents by gender, 1994 Alberta university graduates



* Based on a scale of 1 to 5, where 1 is 'very dissatisfied' and 5 is 'very satisfied'. This graph reports responses of 'very satisfied' and 'satisfied'.

These three job characteristics are basic *extrinsic* job rewards – the tangible economic signs of career success. Relatively more important in the minds of most Canadian workers are *intrinsic* rewards that reflect the task content of a job. The 1997 AGS measures three intrinsic job characteristics: opportunities to make your own decisions; opportunities to develop your skills and abilities; and opportunities to do interesting and challenging work. On all three measures, approximately 70 percent of respondents of both sexes were satisfied or very satisfied. These results match the findings reported in our earlier discussions of the fit between jobs and educational programs and of self-assessed overqualification for a job. About one in four (nonstudent) graduates felt overqualified and almost as many indicated a poor fit between their education and their current job (see Figures 18 and 19). Figure 24 reveals only slightly higher proportions that did not express satisfaction with intrinsic job rewards.

To summarize, (nonstudent) members of the Class of '94 were generally positive in their subjective assessments of their current jobs. A large majority reported that they were "satisfied" or "very satisfied" with their jobs, and similar proportions positively evaluated intrinsic job characteristics. However, graduates as a whole were less satisfied with their extrinsic job rewards. Women, more so than men, expressed dissatisfaction with their career advancement prospects, a finding consistent with the gendered picture of

graduates' employment that has emerged as a central theme in this report. Also reinforcing a dominant theme is the finding that employment in semiskilled or unskilled jobs, in lower tier service industries, and to some extent in nonstandard jobs is evaluated less positively by recent university graduates.

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Appendix A: 1997 Supplementary Tables and Figures

TABLE A1: Graduate Population, Completed Interviews, and Response Rates by University

	All 1994 graduates	No phone number ¹	New phone number located ²	Available phone numbers	Completed interviews	Response rate as % of all graduates	Response rate as % of available numbers
All universities	11,743	1138	689	11,294	6012	51%	53%
University of Alberta	6442	827	510	6125	3215	50%	52%
University of Calgary	4217	285	160	4092	2198	52%	54%
University of Lethbridge	888	26	19	881	475	53%	54%
Athabasca University	196	—	—	196	124	63%	63%

1. No telephone number available in university data base.

2. Number added following CD-ROM directory search prior to interviewing; not all of these numbers were current since CD-ROM directories are not completely up to date.

TABLE A2: Graduates and Completed Interviews, by University and Faculty

University and Faculty	1994 Graduate Population	Completed Interviews
All Universities	11,743	6012
University of Alberta	6442	3215
Agric./Home Ec/Forestry	200	121
Arts ¹	1022	494
Business	431	221
Dentistry	138	83
Education	1208	652
Engineering	459	188
Graduate Studies	1180	541
Law	169	82
Medicine	172	75
Nursing	252	138
Physical Education	165	90
Pharmacy	106	55
Rehab Medicine	147	67
Faculte St. Jean	101	41
Science	692	364
University of Calgary	4217	2198
Education	549	323
Engineering	208	86
Environmental Design	53	23
Fine Arts	135	75
General Studies	169	81
Graduate Studies	641	331
Humanities	223	125
Kinesiology	113	63
Law	65	31
Medicine	69	28
Management	488	245
Nursing	97	57
Science	368	223
Social Work	159	77
Athabasca University	196	124
University of Lethbridge ²	888	475
Arts and Science	406	229
Education	144	90
Management	265	115
School of Fine Arts	26	12
School of Nursing	47	29

1. Includes School of Native Studies (14 graduates and 3 completed interviews).

2. University of Lethbridge graduates who received two degrees are listed by the first faculty recorded in the university data base.

Table A3: Median Monthly Income of Non-Students Employed Full-time in 1997 by Occupation and Gender, and Female-Male Earnings Ratios and Employment Concentration, 1994 Alberta University Graduates.

Occupation	Gross Mean Monthly Income (\$) *			F/M earnings ratio %	Total employed full-time (n)
	Total	Female	Males		
Management	3333	3000	3917	76.6	430
Prof - Bus/Fin	2917	2708	3000	90.3	200
Prof - Nat/Applied Sci	3583	3333	3750	88.9	520
Prof - Health	3417	3333	4500	74.1	338
Prof - Soc Sci, Gov't, Education	2833	2800	3000	93.3	1188
Prof - Art/Culture	2667	2500	3000	83.3	68
Skilled - Admin/Bus	2500	2417	2633	91.8	146
Tech - Nat/Applied Sci	2958	2450	3333	73.5	108
Tech/Skilled - Health	3600	3750	--	--	40
Paraprof - Law, SS, Ed	2600	2600	--	--	88
Tech/Skilled - Art, Culture, Rec	2167	2000	2375	84.2	48
Skilled - Sales/Service	2917	2600	3083	84.3	83
Skilled - Blue Collar	2917	--	2917	--	59
Clerical	2000	2000	2225	89.9	164
Semiskilled - Sales/Service	2000	1667	2400	69.5	166
Other Semiskilled	2500	--	2400	--	53
Unskilled	1990	--	2500	--	30
All occupations	3000	2800	3333	84.0	3729

*Gross (before deductions) monthly income standardized from data reported in different pay periods (e.g., hourly, weekly, annually); includes main job and other job if respondent had more than one job.

-- Too few cases (15 or less) for reliable estimates.

Table A4: Median Monthly Income of Non-Students Employed Full-time in 1997 by Industry and Gender, and Female-Male Earnings Ratios and Employment Concentration, 1994 Alberta University Graduates.

Industry	Gross Mean Monthly Income (\$) *				Total employed full-time (n)
	Total	Female	Males	F/M earnings ratio %	
Primary	3333	2613	3417	76.5	96
Mining, Oil, Gas	3750	3250	3833	84.8	305
Manufacturing	3000	2958	3167	93.4	111
Construction	3000	2333	3246	71.9	84
Transportation	3000	3000	2958	101.4	46
Communication	3500	2917	3750	77.8	126
Wholesale	3000	--	2958	--	43
Retail	2000	1800	2083	86.4	172
Finance/Insurance/Real Estate	2600	2333	2917	80.0	178
Business Services	3167	2917	3333	87.5	515
Public Administration	2917	2833	3000	94.4	211
Education Services	2833	2750	3000	91.7	1046
Health/ Social Services	3200	3040	3583	84.8	633
Other Services	2000	2000	2000	100.0	155
All industries	3000	2800	3333	84.0	3721

*Gross (before deductions) monthly income standardized from data reported in different pay periods (e.g., hourly, weekly, annually); includes main job and other job if respondent had more than one job.

-- Too few cases (15 or less) for reliable estimates.

Table A5: Objective and Subjective Under-Employment by Field Of Study, 1994 Alberta University Graduates, Currently Employed Non-Students Only.

Field of Study	Percent		
	University Degree Required	Feel Over-Qualified *	Earn Less Than Deserve **
Fine Arts	36.0	40.2	75.5
Social Sciences	37.5	43.3	58.9
Humanities	34.7	46.3	59.6
Business/ Commerce	59.6	31.2	48.1
Education	83.2	19.4	61.0
Phys Ed./ Kinesiology	45.3	34.3	61.8
Engineering	87.6	13.4	28.8
Law	93.3	7.7	39.2
Medicine/ Dentistry	100.0	~	46.0
Nursing	42.4	19.8	49.7
Other Health Professions	93.3	15.9	27.2
Social Work	80.0	15.0	66.1
Math/ Physical Sciences	54.5	30.0	48.1
Biological Sciences	56.7	38.1	56.7
Ag/For/Earth Sciences	63.0	20.4	42.8
M.A.	71.2	36.4	62.5
M.Ed.	77.1	27.3	60.1
M.Sc./M.Eng.	83.3	18.8	46.4
M.B.A.	84.1	16.9	32.4
M.S.W./ M.N.	90.5	15.9	58.3
Ph.D.	89.6	22.7	62.1
Total	67.0	26.4	53.3
N	2836	1110	2235

*Respondents were asked if, given their education and training, they felt overqualified for their (main) job.

**Respondents were asked if, given their education and training, they felt they were earning less than they deserved, about the right amount, or more than they deserved. Only 1.5% reported earning more than they deserved.

Figure A1: 1994 graduates not interviewed by reason

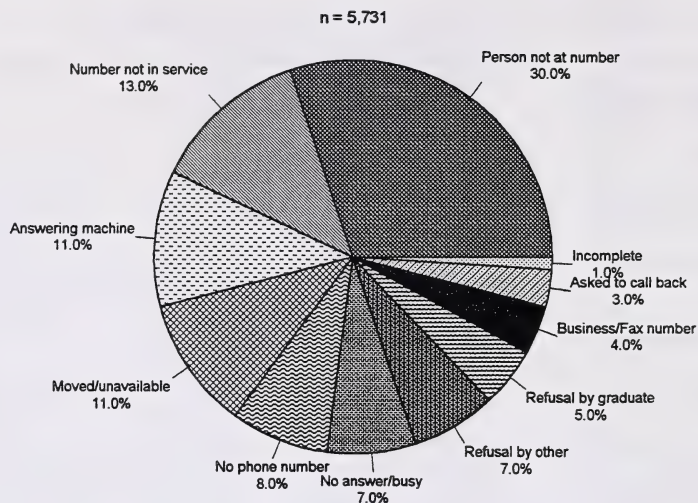


Figure A2: Age at graduation by field of study, 1994 Alberta university graduates

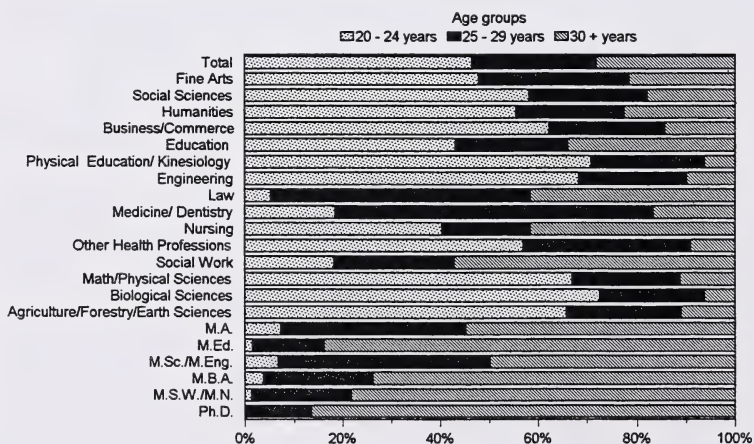


Figure A3: Marital status and dependent children in 1997 by field of study, 1994 Alberta university graduates

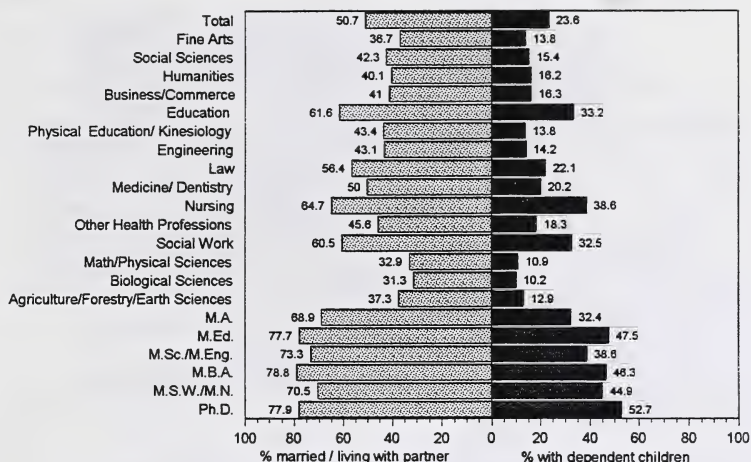


Figure A4: Visible minority status by field of study, 1994 Alberta university graduates

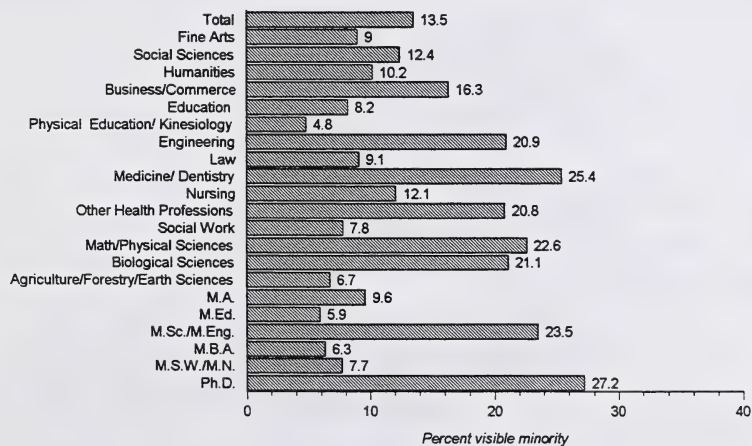
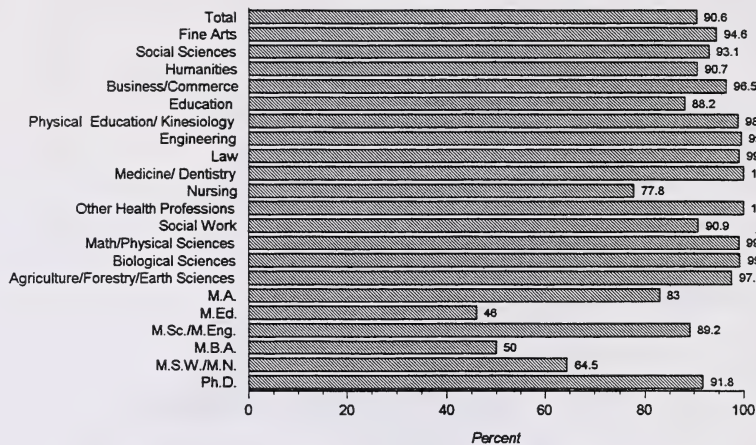
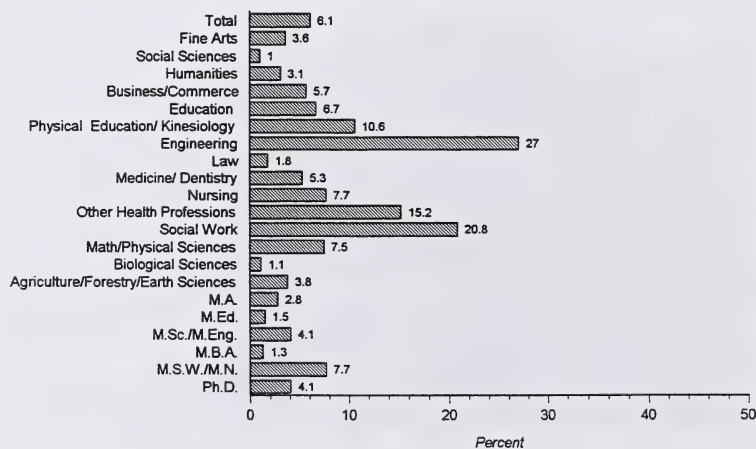


Figure A5: Full-time student status* by field of study, 1994 Alberta university graduates



* Percent reporting themselves as primarily full-time students during their program of studies.

Figure A6: Co-op program* enrolment by field of study, 1994 Alberta university graduates



* Includes work experience programs that provide alternating periods of work and study.

Figure A7: Part-time and full-time employment during last year of program by field of study, 1994 Alberta university graduates

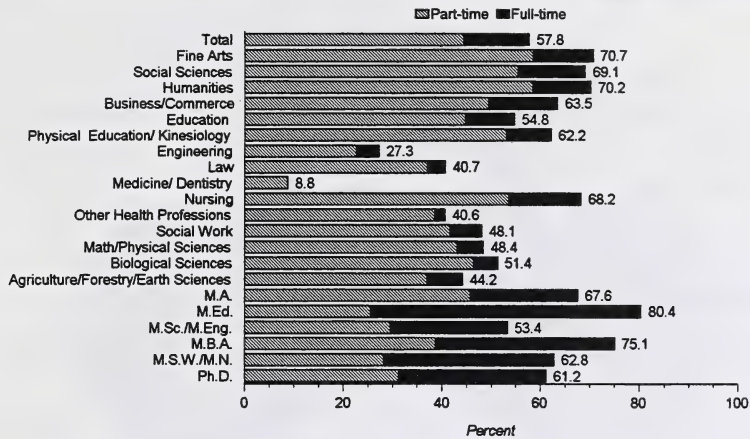


Figure A8: Student loans and other education-related debt at the time of graduation by selected characteristics, 1994 Alberta university graduates

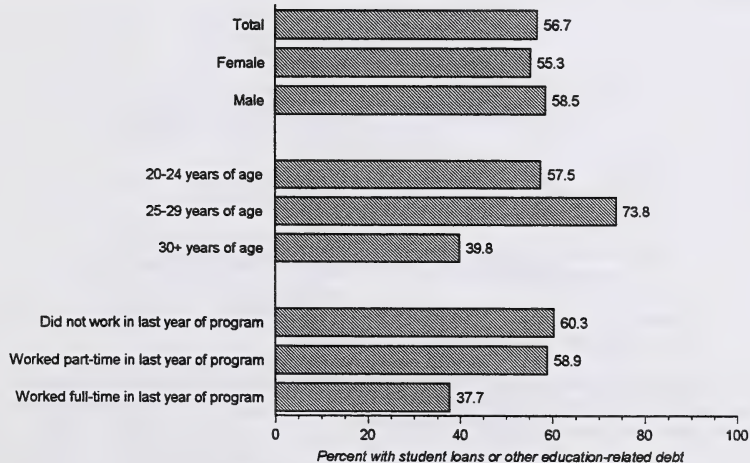


Figure A9: Full-time and part-time enrolment in any post-secondary program for credit since graduating in 1994 by field of study, 1994 Alberta university graduates

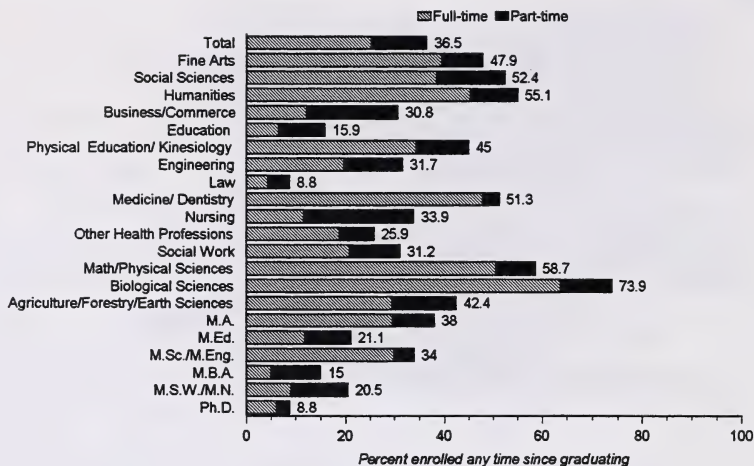


Figure A10: Current (1997) full-time and part-time enrolment in post-secondary programs for credit by selected characteristics, 1994 Alberta university graduates

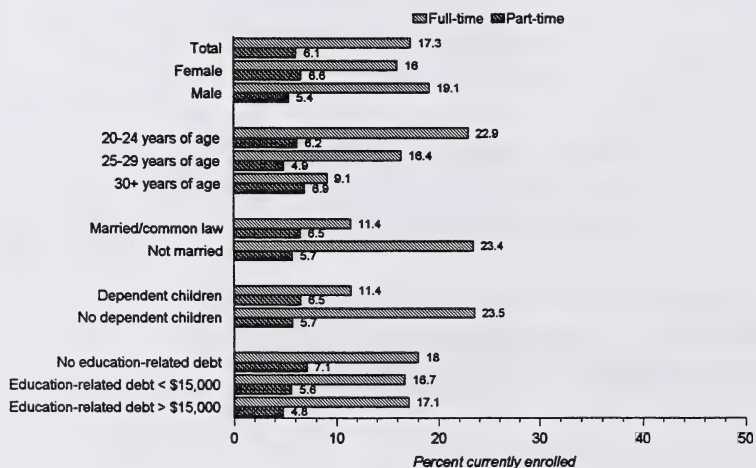


Figure A11: Type of post-secondary credit program enrolled in after graduating, 1994 Alberta university graduates

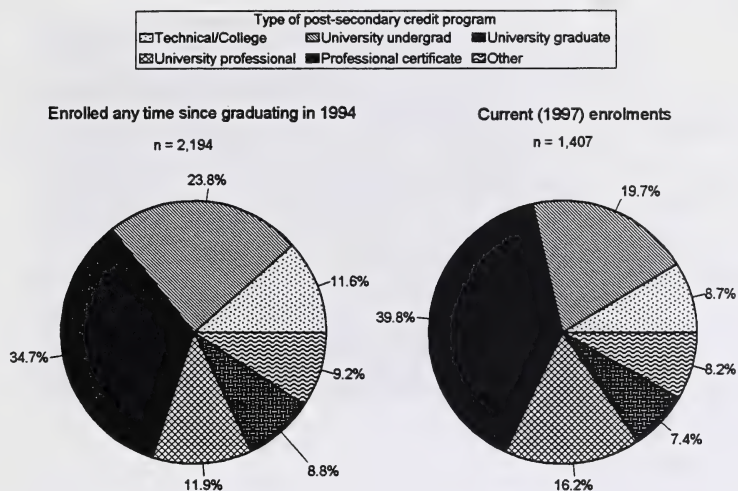
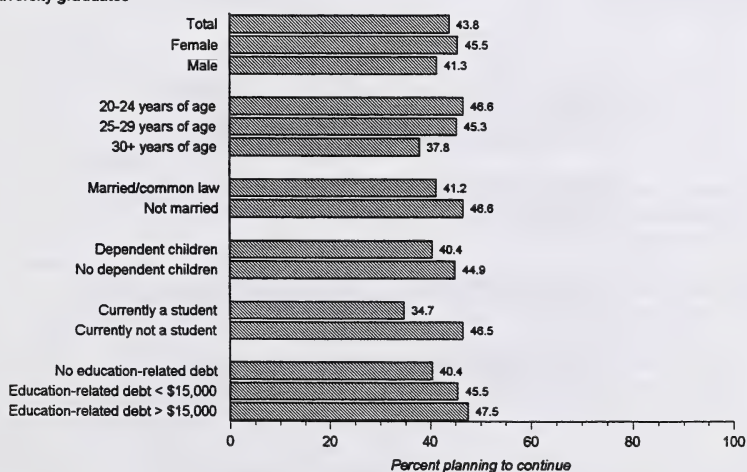


Figure A12: Plans to continue post-secondary education after 1997* by selected characteristics, 1994 Alberta university graduates



* Graph reports responses of 'next year' and 'in several years' combined.

Figure A13: Labour force participation rates in 1997 among nonstudents by field of study, 1994 Alberta university graduates

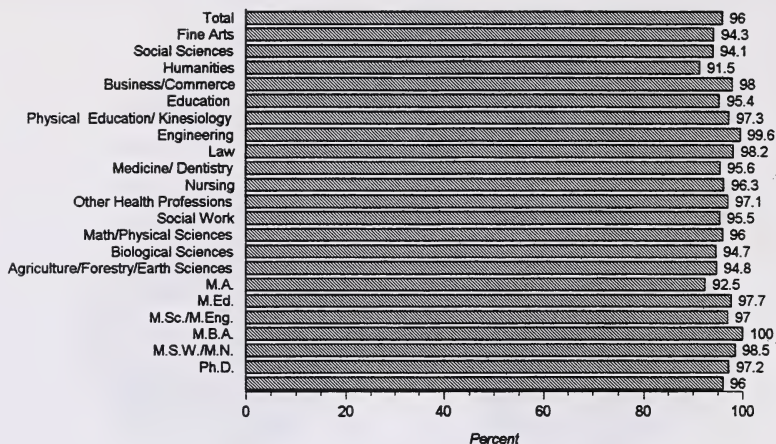
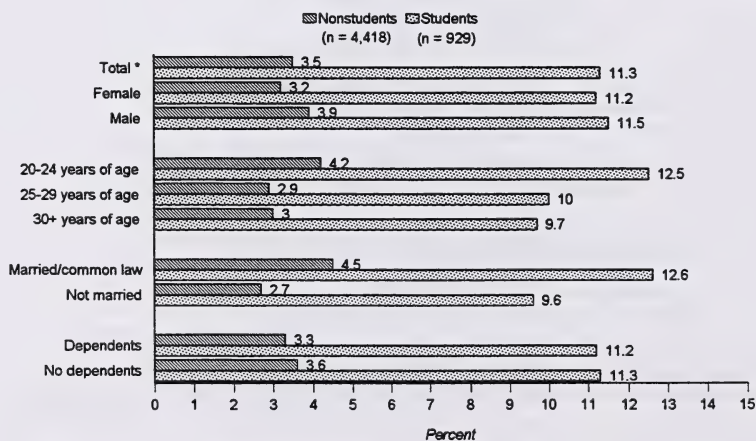


Figure A14: Unemployment rates in 1997 among nonstudents and students by selected characteristics, 1994 Alberta university graduates



* A total of 155 nonstudents and 105 students were unemployed in 1997.

Figure A15: Multiple jobs in 1997 among nonstudents by field of study, 1994 Alberta university graduates

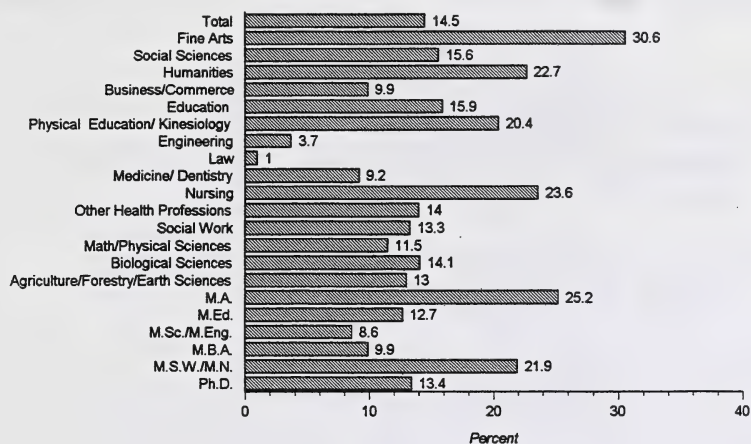


Figure A16: Part-time employment among nonstudents in 1997 by gender and selected demographic characteristics, 1994 Alberta university graduates

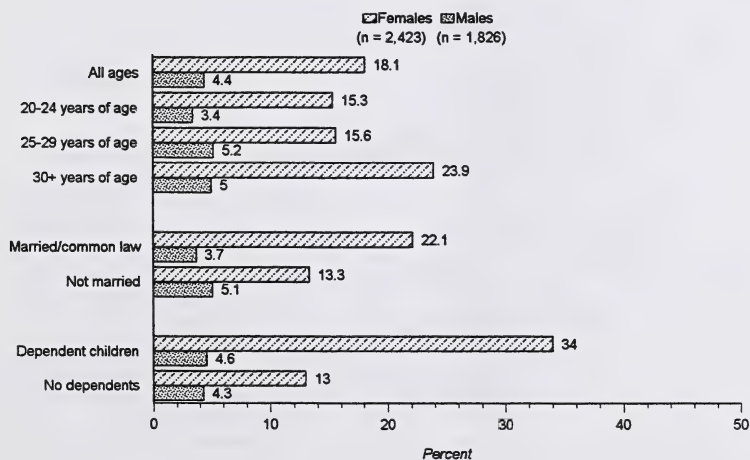


Figure A17: Temporary employment among nonstudents in 1997 by gender and selected demographic characteristics, 1994 Alberta university graduates

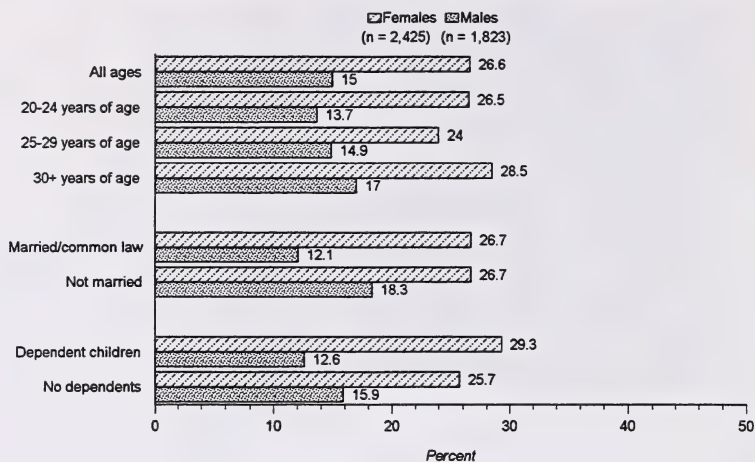


Figure A18: Self-employed in 1997 among nonstudents by field of study, 1994 Alberta university graduates

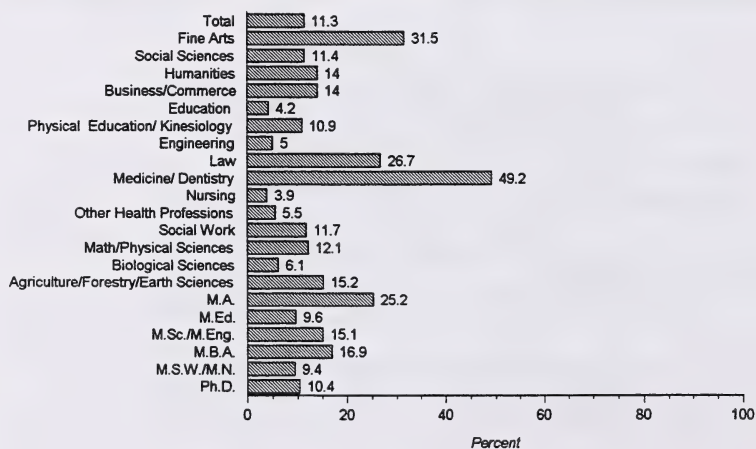


Figure A19: Occupational distribution in 1997 of employed students and nonstudents, 1994 Alberta university graduates

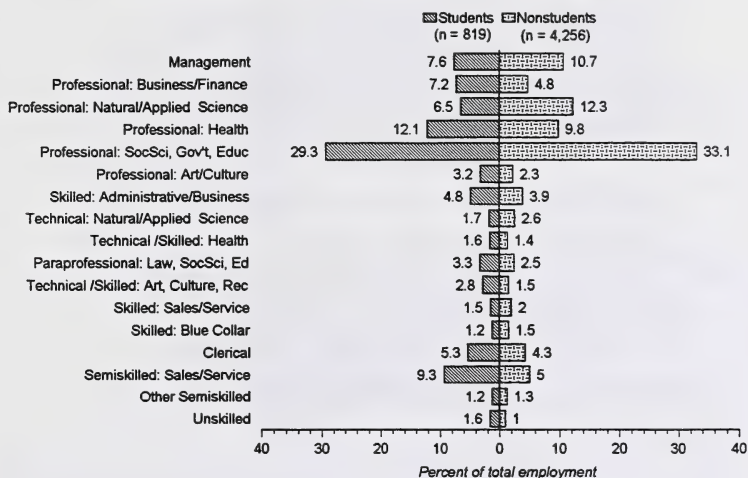


Figure A20: Occupational distribution of employed nonstudents in 1997 by gender, 1994 Alberta university graduates

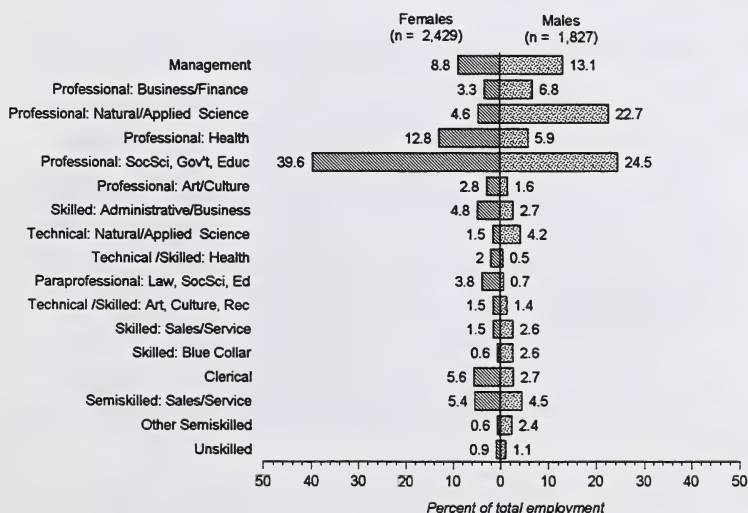


Figure A21: Industrial distribution of employed nonstudents in 1997 by gender, 1994 Alberta university graduates

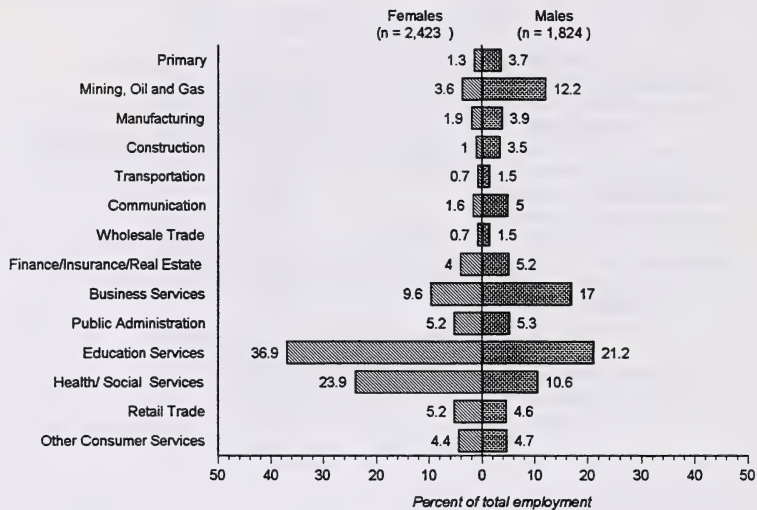


Figure A22: Occupational distribution of employed nonstudents in 1997 by industrial sector, 1994 Alberta university graduates

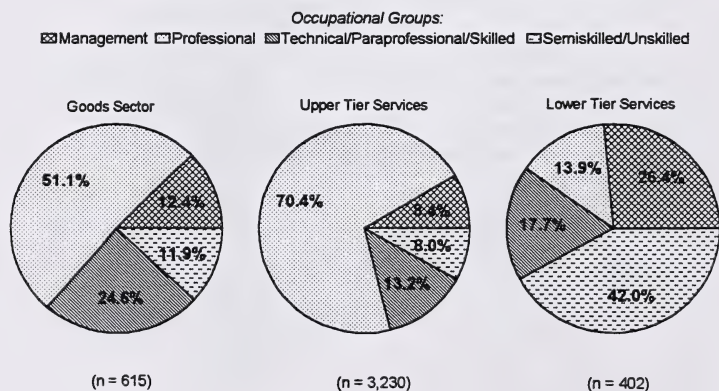
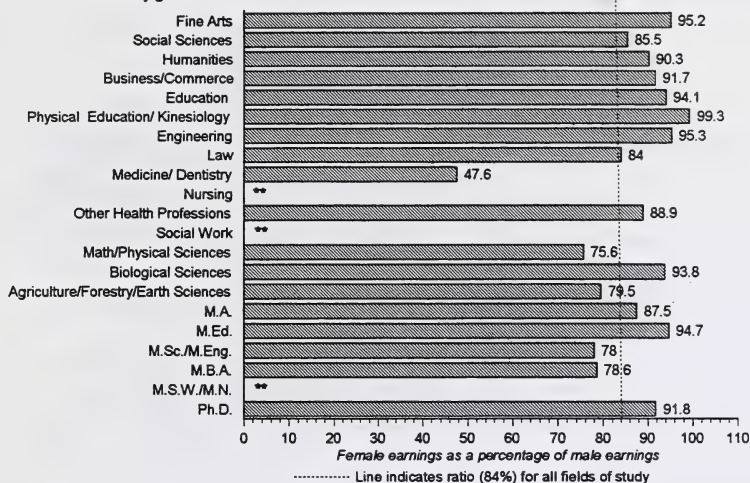


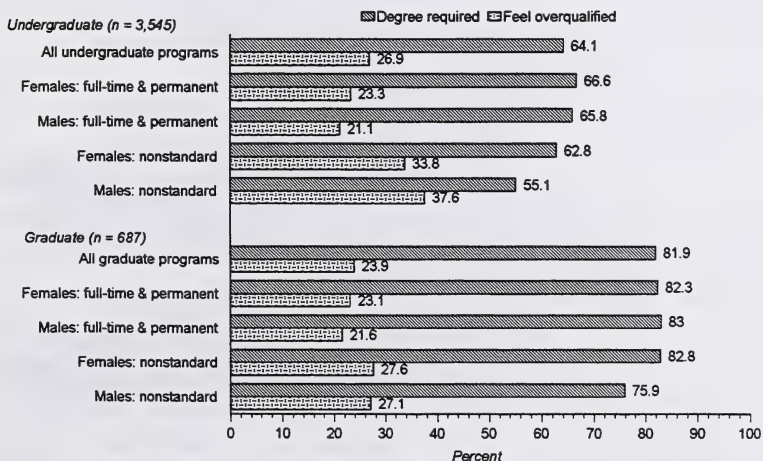
Figure A23: Female - male median earnings* ratio for nonstudents employed full-time in 1997 by field of study, 1994 Alberta university graduates



* Based on gross (before deductions) median monthly income standardized from data reported in different pay periods (e.g., hourly, weekly, annually).

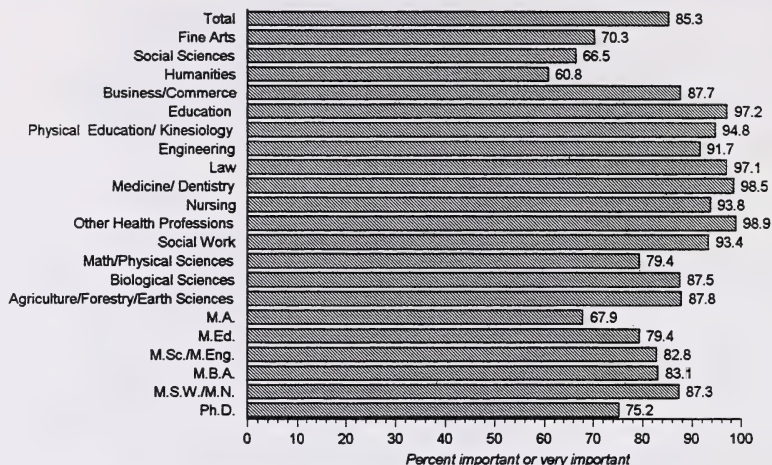
** Too few male cases (15 or less) for reliable estimates.

Figure A24: Educational requirements and perceived overqualification in current job, nonstudents employed in 1997 by program level, gender and work arrangements*, 1994 Alberta university graduates



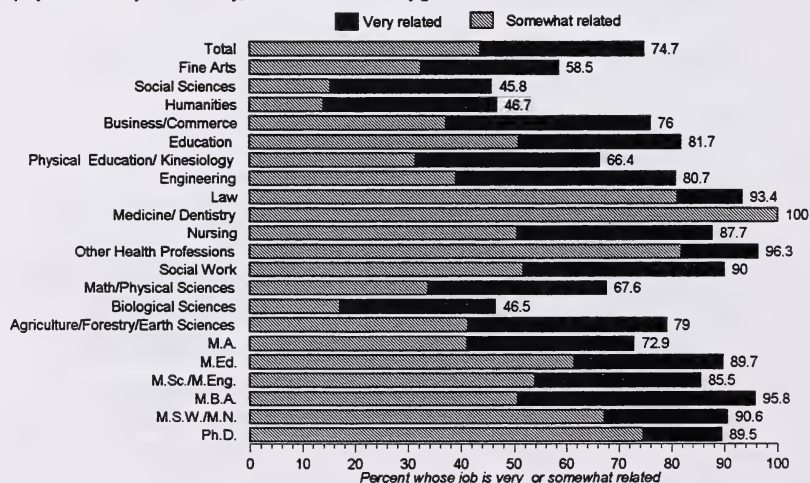
* Nonstandard work includes one or more of part-time work, temporary work, and multiple job holding. People in more than one type are counted only once. Standard work is full-time and permanent.

Figure A25: Importance of acquiring skills for a particular job in decision to enrol in university program*, nonstudents employed in 1997 by field of study, 1994 Alberta university graduates



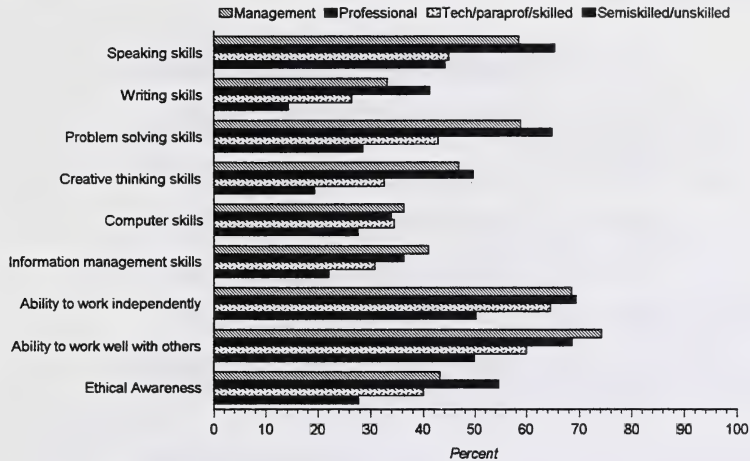
* Based on responses to the question: "When you decided to enrol in [your] program, how important was it for you to acquire the skills needed for a particular job (very important, important, not important, or not at all important)?"

Figure A26: Relatedness of current job to subject-area knowledge acquired in university program*, nonstudents employed in 1997 by field of study, 1994 Alberta university graduates



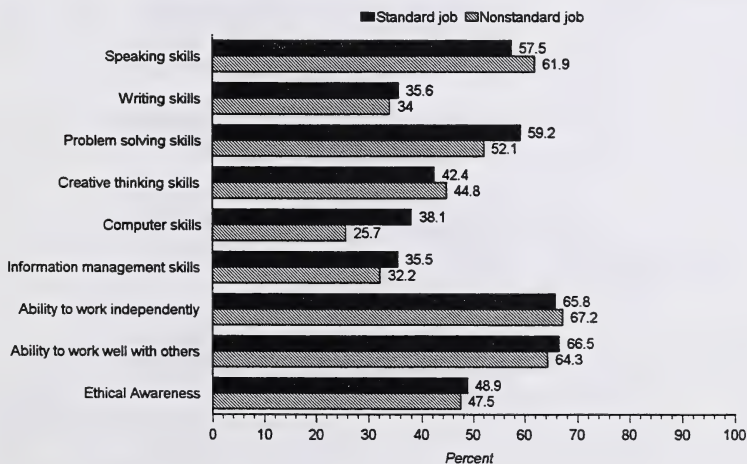
* Based on responses to the question: "In terms of the subject-area knowledge you acquired (e.g., history, biology, law) how related is your current (main) job to the program from which you graduated in 1994 (very, somewhat, not very, or not at all related)?"

Figure A27: Extensive use of skills, knowledge, and abilities* in current job, nonstudents in 1997 by occupation, 1994 Alberta university graduates



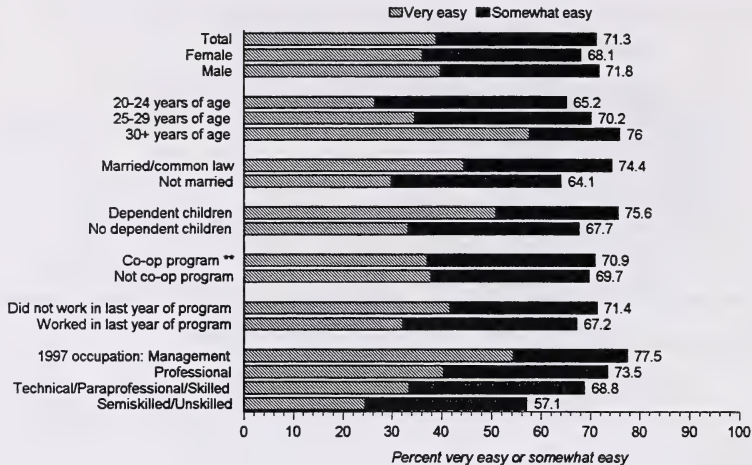
* Based on responses to the question: "Now we would like to assess to what extent you actually use the following skills, knowledge and abilities in your current (main) job. Using a scale of 1 to 5, where 1 is 'not at all' and 5 is 'to a great extent', to what extent do you use each of the following?" This graph reports responses of 5 (to a great extent).

Figure A28: Extensive use of skills, knowledge, and abilities* in current job, nonstudents in 1997 by type of job, 1994 Alberta university graduates



* Based on responses to the question: "Now we would like to assess to what extent you actually use the following skills, knowledge and abilities in your current (main) job. Using a scale of 1 to 5, where 1 is 'not at all' and 5 is 'to a great extent', to what extent do you use each of the following?" This graph reports responses of 5 (to a great extent).

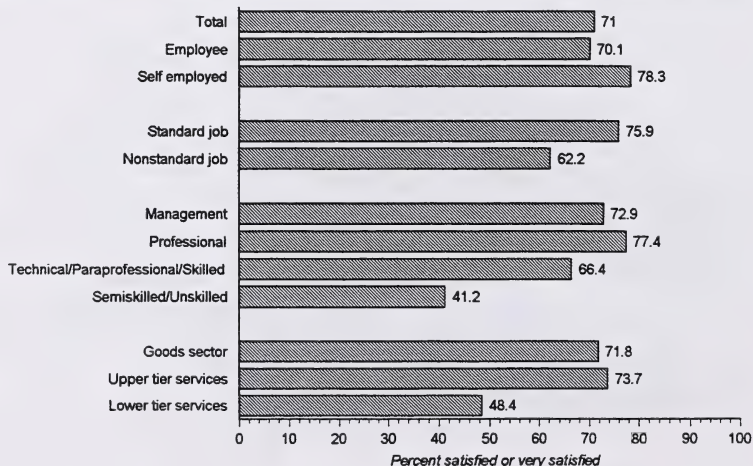
Figure A29: Adjustment to the workforce*, employed nonstudents in 1997 by selected characteristics, 1994 Alberta university graduates



* Based on responses to the question: "Since graduating in 1994, how would you rate your adjustment from university to the workforce (very difficult, somewhat difficult, somewhat easy, very easy)?" This graph reports responses of 'very easy' or 'somewhat easy'.

** Co-op or other work experience program that alternated periods of work and study.

Figure A30: Overall job satisfaction* among nonstudents in 1997 by type of job, occupation, and industry, 1994 Alberta university graduates



* Based on responses to the question: "Using a scale of 1 to 5, where 1 is 'very dissatisfied' and 5 is 'very satisfied', all things considered, how satisfied are you with your current (main) job?" Responses of 4 and 5 are reported here.

Appendix B: 1997 AGS Questionnaire

FOLLOW-UP SURVEY OF 1994 ALBERTA UNIVERSITY GRADUATES

CATI Telephone Questionnaire

1	Telephone Number	
2	CATI Record Number	
3	Interviewer's Name	
4	Date	
5	Start Time	
6	Finish Time	

**Dr. H. Krahn and Dr. G. Lowe
Principal Co-investigators**

**Population Research Laboratory
University of Alberta**

final version JANUARY 29, 1997

INTRODUCTION

1. Hello, my name is _____ and I'm calling (*long distance*) on behalf of the Population Research Laboratory at the University of Alberta.
2. May I please speak to _____? (*If graduate does not live at this household, record pertinent information on the message line of the CATI call history screen*)

E.g.: New number is XXX-XXX-XXXX; Unable to trace; Refused to disclose any info

3. We are conducting a study of 1994 graduates from Alberta's four universities for Alberta Advanced Education and Career Development. Your name was selected from your University Registrar's records. The purpose of the survey is to gather information on graduates' employment and educational experiences, so that programs can be improved.
4. I would like to interview you and I'm hoping that now is a good time for you. (*The interview will take about 12 minutes, depending on how many of the questions apply to you*).
5. Before we start, I'd like to assure you that your participation is voluntary and that any information you provide will be kept completely confidential. When we summarize the results, only group averages will be calculated and no individuals will be identified. If there are any questions that you do not wish to answer, please feel free to point these out to me and I'll go on to the next question. You of course have the right to terminate the interview at any time.

If you have any questions about the survey, you can phone the Study Supervisor in Edmonton at (403) 492-2505 (*call collect*) for further information.

Degree Program:

FIRST, WE WOULD LIKE TO CONFIRM SOME INFORMATION.

1. Did you receive a _____ (degree/diploma/certificate)
in _____ (month) _____ (year), at the University of

Yes 1

No (EXPLAIN) _____ 2

Institution:

University of Alberta 1

University of Calgary 2

University of Lethbridge..... 3

Athabasca University..... 4

Degree, diploma, or certificate obtained in 1994:

Bachelor's Degree (e.g. B.A., B. Ed., B.Sc.) 1

Diploma/certificate (e.g. Dental Hygiene, Orthodontics) 2

Professional Degree (e.g. M.D., D.D.S., L.L.B.) 3

Master's Degree (e.g. M.A., M.Sc., M.Ed.) 4

Doctorate (e.g. PhD, D.Sc., D. Ed.).. 5

Dual Degree (list both _____)..... 6

(DO NOT ASK ATHABASCA GRADUATES 2)

2. Did you obtain your degree/diploma/certificate in 1994 from the
faculty of _____.

Yes 1

No (EXPLAIN) _____ 2

Faculty or program:

UNIVERSITY OF ALBERTA

Agriculture, Forestry and Home Economics 01

Arts..... 02

Business..... 03

Dentistry 04

Education 05

Engineering 06

Faculte Sainte-Jean 07

Graduate Studies and Research 08

Law..... 09

Medicine	10
Native Studies	11
Nursing	12
Pharmacy and Pharmaceutical Sciences	13
Physical Education and Recreation..	14
Rehabilitation Medicine	15
Science	16
Other (PLEASE SPECIFY).....	17

UNIVERSITY OF CALGARY

Education	18
Engineering	19
Environmental Design	20
Fine Arts	21
General Studies	22
Humanities	23
Phys. Ed. & Kinesiology	24
Law.... ..	25
Management	26
Medicine	27
Nursing	28
Science	29
Social Sciences	30
Social Work	31
Other (PLEASE SPECIFY).....	32

UNIVERSITY OF LETHBRIDGE

Arts and Science	33
Education (excluding combined degree programs)	34
Education (including combined degree programs)	35
Management	36
School of Fine Arts.....	37
School of Nursing	38
Other (PLEASE SPECIFY).....	39

ATHABASCA UNIVERSITY

Arts	40
Administration	41
Commerce	42
General Studies	43
Nursing	44
Science	45
Other (PLEASE SPECIFY).....	46

THANK YOU FOR CONFIRMING THAT INFORMATION. NOW WE WOULD LIKE TO ASK A FEW QUESTIONS ABOUT THE PROGRAM YOU COMPLETED IN 1994.

3. a. What was your major (or program) in 1994?

Major: _____

(INTERVIEWERS: If more than one major given clarify as Dual Major and list both.)

- b. In what year did you start studying for this degree, diploma, or certificate?

_____ (year)

(DO NOT ASK ATHABASCA GRADUATES 4 or 5)

4. Were you enrolled in your _____ program primarily as: (READ)

A full-time student..... 1

A part-time student..... 2

No Response. 0

5. Were you enrolled in a Co-op education or other work experience program at university (i.e., a program that alternates periods of work and study)?

Yes..... 1

No..... 2

No Response. 0

6. a. At the time of your graduation in 1994, approximately what was the total amount you owed from all student loans accumulated during your entire post-secondary education?

_____ (\$ amount owed)

- b. Approximately what was the total amount you owed from all other education-related debts (accumulated during your entire post-secondary education, e.g., credit cards, relatives, bank loans)?

_____ (\$ amount owed)

7. When you decided to enrol in the _____ program, how important was it for you to acquire the skills needed for a particular job? Would you say: (READ)

Very important..... 1
 Important..... 2
 Not important..... 3
 Not at all important..... 4
 Don't know (VOLUNTEERED)..... 8
 No Response..... 0

Post-Graduation Education:

8. a. Since graduation in 1994, have you been enrolled in any post-secondary program for credit (i.e., leading toward a degree, diploma or certificate)?

Yes..... 1 (ASK 8b)
 No..... 2 (GO TO 11)
 No Response..... 0 (GO TO 11)

- b. Are you a student now?

Yes..... 1
 No..... 2
 No Response..... 0

9. In what type of post-secondary program *were/are* you enrolled?

Technical Institute/Community College..... 1
 University - Undergraduate (e.g. B.A., B. Ed., B.Sc.)..... 2
 University - Graduate (e.g. Master's, Doctorate)..... 3
 University - Professional School (e.g. Law, Dentistry, Medicine)..... 4
 Professional Certification (VOLUNTEERED)
 (e.g. C.A., P.Eng., Nursing, Faculty of Extension)..... 5
 Other (SPECIFY)..... 6
 No Response..... 0

10. *Were/are* you enrolled in this educational program primarily as: (READ)

A full-time student..... 1
 A part-time student..... 2
 No Response..... 0

11. Do you plan to enrol in *another* post-secondary program for credit: **(READ)**

Within the next year 1
Within the next several years 2
No immediate plans to enrol. 3
No Response. 0

Pre-Graduation Employment:

12. a. Before you completed your _____ program in 1994, did you ever work full-time, that is, usually 30 or more hours a week, not including summer jobs or co-op work terms? **(PRIOR TO ENROLLING OR WHILE ENROLLED IN THE PROGRAM)**

Yes 1 **(ASK 12b)**
No..... 2 **(GO TO 13)**
No Response. 0 **(GO TO 13)**

b. What was the total number of months or years of full-time work experience that you had before completing the _____ program? Please add up the duration of all your full-time jobs.

_____ (total months) _____ (total years)

No Response. 00

13. Did you have a part-time (*or full-time job*) in the last year of your _____ program prior to completion, not including summer jobs or co-op work terms? (*For this study, full-time employment is defined as working 30 hours or more per week, and part-time employment is defined as working less than 30 hours per week.*)

Part-time job.. 1
Full-time job... 2
Neither..... 3
No Response. 0

Post-Graduation Employment:

14. a. Since your graduation in 1994, did you ever have a paying job, including self-employment?

Yes 1 (GO TO 15)

No..... 2 (ASK 14b)

No Response. 0 (GO TO 36)

- b. What is the main reason why you have not had a paying job since you graduated in 1994? (DO NOT READ CATEGORIES)

Could not find a job 01 (GO TO 36)

Own illness or disability 02 (GO TO 36)

Family responsibilities 03 (GO TO 36)

Going to school 05 (GO TO 36)

Travelling..... 06 (GO TO 36)

Taking time off..... 07 (GO TO 36)

Could not find the kind of job I wanted 08 (GO TO 36)

Not interested in finding a job..... 09 (GO TO 36)

Other (SPECIFY)..... 10 (GO TO 36)

No Response. 00 (GO TO 36)

(DO NOT ASK ATHABASCA GRADUATES 15)

15. Since graduating in 1994, how would you rate your adjustment from university to the work force? Would you say it has been ...

Very difficult... 1

Somewhat difficult 2

Somewhat easy..... 3

Very easy 4

Still adjusting (VOLUNTEERED) 5

No adjustment required; always in

the labour force (VOLUNTEERED) 6

Don't know (VOLUNTEERED)..... 8

No Response. 0

NEXT, WE WOULD LIKE TO ASK YOU ABOUT YOUR CURRENT ACTIVITIES.

16. Do you currently have a paying job, including self-employment?
(PROBE TO FIND OUT IF MORE THAN ONE JOB)

Yes, one job 1 (ASK 17)
Yes, more than one job 2 (ASK 17 and 18)
No..... 3 (GO TO 21)
No Response. 0 (GO TO 21)

17. a. What is the total number of hours you usually work per week in your (*main*) job?
(*The main job refers to the one with the most hours worked in a week.*)

_____ (total work hours per week)

(IF LESS THAN 30 HOURS PER WEEK, ASK 17b. OTHERWISE GO TO 18)

- b. What is the main reason you usually work less than 30 hours per week (*in your main job*)?
(DO NOT READ CATEGORIES)

Full-time work is under 30 hours a week 1
Did not want full-time work 2
Own illness or disability 3
Personal or family responsibilities 4
Going to school 5
Could only find part-time work..... 6
Other 7
No Response. 0

18. (IF MORE THAN ONE JOB, ASK 18. OTHERWISE GO TO 19)

What is the total number of hours you usually work per week in all jobs combined?

_____ (total work hours per week)

19. a. Are you self-employed (*in your main job*)?

Yes 1 (ASK 19b)

No 2 (GO TO 20)

No Response. 0 (GO TO 20)

b. Approximately how many people other than yourself do you employ (*in your main job*)?

_____ (number of employees)

Don't Know (VOLUNTEERED) 8

No Response. 0

20. Is your (*main*) job permanent or temporary?

(*Permanent means there is no indication when the job will end. Temporary means the job will terminate at some specified time.*)

Permanent..... 1 (GO TO 22)

Temporary 2 (GO TO 22)

No Response. 0 (GO TO 22)

21. a. Are you currently looking for a job?

Yes 1 (GO TO 36)

No 2 (ASK 21b)

No Response. 0 (GO TO 36)

b. What is the main reason you are not looking for a job?
(DO NOT READ CATEGORIES)

Own illness or disability 01 (GO TO 36)

Personal or family responsibilities 02 (GO TO 36)

Going to school 03 (GO TO 36)

No longer interested in finding a job. 04 (GO TO 36)

Waiting for recall (to former job)..... 05 (GO TO 36)

Has already found a new job 06 (GO TO 36)

Waiting for replies from employers... 07 (GO TO 36)

Could not find the kind of job wanted	08 (GO TO 36)
Discouraged with looking.....	09 (GO TO 36)
Travelling/taking time off	10 (GO TO 36)
No reason given	11 (GO TO 36)
Other	12 (GO TO 36)
No Response.	00 (GO TO 36)

Current (main) Job:

22. a. What kind of work do you do? That is, what is your job title? *(If you held more than one job, choose the one with the most hours.)*

OCCUPATION _____

- b. What does this job involve? **(DESCRIBE MAJOR WORK DUTIES)**

- c. What kind of business, industry, or service is this?

23. In what month and year did you start this job?

_____ (month) _____ (year)

Don't Know **(VOLUNTEERED)** 8

No Response. 0

(DO NOT ASK 24 IF SELF EMPLOYED)

24. Since starting work for your present employer, have you received any promotions?

Yes 1

No..... 2

No response 0

25. Do you supervise the work of other employees?

Yes 1
 No..... 2
 No Response. 0

26. Does your (*main*) job provide any of the following benefits?

	Yes	No	NR
a. Extended health benefits (<i>not covered by provincial health insurance</i>)....	1	2	0
b. Dental plan	1	2	0
c. Retirement plan/pension	1	2	0

27. a. Working your usual hours at your current (*main*) job, approximately what is your gross salary or earnings, before taxes and deductions?

ENTER AMOUNT

_____ \$

Don't know 8
 No Response. 0

b. ENTER PAY PERIOD
 PROBE FOR PAY PERIOD, IF NECESSARY

Hourly1
 Daily2
 Weekly3
 Every two weeks/twice a month4
 Monthly.....5
 Yearly6
 Other (SPECIFY)7
 Don't know.....8
 No Response.0

(IF RESPONDENT HAS MORE THAN ONE JOB, ASK 28. OTHERWISE GO TO 29)

28. a. Approximately what is your gross salary or earnings in your other job(s), before taxes and deductions, working your usual hours?
ENTER AMOUNT
_____ \$

Don't know 8
No Response. 0

- b. ENTER PAY PERIOD
PROBE FOR PAY PERIOD, IF NECESSARY

Hourly 1
Daily 2
Weekly 3
Every two weeks/twice a month 4
Monthly..... 5
Yearly 6
Other (SPECIFY) 7
Don't know..... 8
No Response. 0

Evaluation of Current (main) Job:

29. Was a university degree required when you were selected for your (*main*) job?

Yes 1
No..... 2
Don't know..... 3
No Response. 0

30. a. In terms of the subject-area knowledge you acquired (e.g., history, biology, law), how related is your current (*main*) job to the program from which you graduated in 1994?

Very related... 1
Somewhat related 2
Not very related 3
Not at all related 4
No Response. 0

- b. In terms of the general skills and abilities you acquired (e.g., communication skills, critical thinking, problem solving), how related is your current (*main*) job to the program from which you graduated in 1994?

Very related... 1
 Somewhat related 2
 Not very related 3
 Not at all related 4
 No Response. 0

- c. Overall, how related is your current (*main*) job to the program from which you graduated in 1994?

Very related... 1
 Somewhat related 2
 Not very related 3
 Not at all related 4
 No Response. 0

31. Given your education, training and experience, do you feel that you are earning:

More than you deserve..... 1
 About the right amount..... 2
 Less than you deserve 3
 Don't Know (**VOLUNTEERED**)..... 8
 No Response. 0

32. Given your education, training and experience, do you feel that you are overqualified for your (*main*) job?

Yes 1
 No..... 2
 Don't Know (**VOLUNTEERED**)..... 8
 No Response. 0

33. Now we would like you to assess to what extent you actually use the following skills, knowledge and abilities in your current (*main*) job. Using a scale of 1 to 5, where 1 is "not at all" and 5 is "to a great extent", to what extent do you use each of the following?

Not at All					To a Great Extent	DK	NR
1	2	3	4	5		8	0

- a. Problem solving skills

- b. Speaking skills
- c. Writing skills
- d. Ethical awareness
- e. Creative thinking abilities
- f. Computer skills
- g. Information management skills
- h. Ability to work independently
- i. Ability to work well with others

34. Using a scale of 1 to 5, where 1 is "very dissatisfied" and 5 is "very satisfied", how satisfied are you with the following aspects of your current (*main*) job?

Very Dissatisfied					Very Satisfied	DK	NR
1	2	3	4	5	8	0	

- a. Pay
- b. Benefits
- c. Opportunities to make your own decisions
- d. Opportunities to develop your skills and abilities
- e. Opportunities for career advancement
- f. Opportunities to do interesting and challenging work

35. All things considered, how satisfied are you with your current (*main*) job?
(Using the same scale of 1 to 5)

Very Dissatisfied					Very Satisfied	DK	NR
1	2	3	4	5	8	0	

Respondent's Demographics:

THESE FINAL QUESTIONS WILL GIVE US A BETTER PICTURE OF THE 1994 GRADUATES WHO TOOK PART IN THIS STUDY.

36. Sex of respondent (DO NOT ASK: entered from University database)

Male... 1
Female 2

37. Age of respondent (DO NOT ASK: entered from University database)

_____ years

No Response. 00

38. What is your current marital status? Are you (READ)...?

Single (never married) 1
Married or living with partner 2
Divorced/Separated/Widowed 3
No Response. 0

39. Do you currently have dependent children or dependent adults living with you?
PROBE

Yes, dependent children 1
Yes, dependent adults 2
Yes, both 3
No 4
No Response. 0

40. Do you consider yourself to be a member of a visible minority group? (*Members of visible minorities are persons who are non-Caucasian in race or non-white in colour. Examples of visible minority groups are: Black, Asian, Middle Eastern, etc.*)

Yes 1
No 2
No Response. 0

41. Do you consider yourself to be an aboriginal person? (*e.g. Status Indian, Non-Status Indian, Inuit, or Metis*)

Yes 1
No 2
No Response. 0

42. Do you consider yourself to have a disability that may disadvantage you in employment?

Yes 1
No 2
No Response. 0

WE'VE REACHED THE END OF OUR QUESTIONS AND I WOULD LIKE TO THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION IN DOING THIS

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